

Psychological Bulletin

PROCEEDINGS OF THE THIRTY-FOURTH ANNUAL MEETING OF THE SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY

C. P. HEINLEIN, SECRETARY, FLORIDA STATE COLLEGE FOR WOMEN

The Thirty-fourth Annual Meeting of the Southern Society for Philosophy and Psychology was held in Durham and in Chapel Hill, North Carolina, on April 7 and 8, 1939. The host institutions were Duke University and the University of North Carolina. The headquarters for the Society was the Washington Duke Hotel in Durham.

The opening meeting of the Society on Friday morning, April 7, at 9:00 A.M., was grouped into 3 separate sections, 1 in philosophy and 2 in psychology, and was held in assembly halls of the Washington Duke Hotel. Five papers in philosophy and 14 papers in psychology were read during the morning sessions.

By invitation from Duke University, a luncheon was given to members and guests of the Society at the Women's Union, East Campus of Duke University.

On Friday afternoon, between 2:00 and 4:00 P.M., 3 separate sections, 1 in philosophy, represented by 5 papers, and 2 in psychology, represented by 10 papers, met in the School of Religion and in the Biology Building, located on West Campus of Duke University. Members and guests of the Society were extended an invitation from Duke University to attend Memorial Exercises, which were held on Friday afternoon at 4:00 P.M. in honor of the late Dr. William McDougall, formerly professor of psychology at Harvard University and Duke University.

On Friday evening at 7:00 P.M. the annual banquet of the Society took place in the Crystal Ball Room of the Washington Duke Hotel. Following the banquet, Dr. Frank A. Geldard delivered his

presidential address, entitled "Explanatory Principles in Psychology." President Geldard was introduced by Dean Marten ten Hoor.

On Saturday morning at 9:00 A.M. a general session, represented by 5 papers in both fields of philosophy and psychology, was attended by the Society as a whole in the main assembly hall of the Washington Duke Hotel. The annual business meeting followed the general session, with President Frank A. Geldard presiding.

By invitation from the University of North Carolina, a luncheon on Saturday was given to members and guests of the Society at the Carolina Inn, Chapel Hill. The luncheon was followed by the Saturday afternoon session, divided into 3 sections: 1 in philosophy, represented by 5 papers, and 2 in psychology, in which 11 papers were read. Following the regular sections in psychology and philosophy, a special section in Extra-Sensory Perception was held in Peabody Building on the Chapel Hill campus.

Members who served as chairmen of the various sections which convened throughout the 2 days are as follows: General Session—President Frank A. Geldard; Philosophy—Alban G. Widgery, George Thomas, and Stephen A. Emery; Psychology—John Frederick Dashiell, Karl E. Zener, A. G. Bayroff, William A. Brownell, Helge Lundholm, and Robert J. Wherry. J. B. Rhine served as chairman of the special section in Extra-Sensory Perception.

The Council of the Society met in executive session on Thursday, April 6, at 8:00 P.M., in the Washington Duke Hotel. President Frank A. Geldard presided over the meeting. Other Council members attending the meeting were: Emily S. Dexter, Marjorie S. Harris, C. P. Heinlein, Marten ten Hoor, Fritz Marti, James B. Miner, and Herbert C. Sanborn.

MINUTES OF THE ANNUAL BUSINESS MEETING

The minutes of the Thirty-third Annual Business Meeting of the Society, as published in the *Psychological Bulletin*, Vol. 35, No. 8, October, 1938, were approved as printed.

The annual report of the Secretary was approved as read. The report contained a description of the various tasks which the Secretary fulfilled during the year 1938-1939. Among the tasks listed was that of extending invitations to prospective members. A total of 218 invitations to join the Society were extended to persons assumed to be qualified for membership in various States of the South.

An analysis of membership during the year 1938-1939 revealed a gain of 36 members by virtue of affiliation with either the American Psychological Association or the American Philosophical Association. The names and addresses of the 36 members are as follows: C. M. Allen, Oklahoma City University; A. G. Bayroff, University of North Carolina; E. D. Bridges, Woman's College, University of North Carolina; P. A. Brown, Alabama Polytechnic Institute; J. Calvin, Yale University; E. E. Cowles, University of Alabama; M. P. Crawford, Yale Laboratories of Primate Biology, Florida; H. H. Dubs, Duke University; J. H. Elder, Yale Laboratories of Primate Biology, Florida; S. A. Emery, University of North Carolina; T. J. Farr, Tennessee Polytechnic Institute; M. McK. Font, Tulane University; M. Freyd, Social Security Board, Washington, D. C.; W. E. Galt, The Lifwynn Foundation, New York City; E. Ghiselli, University of Maryland; E. H. Henderson, Meredith College; J. G. Jenkins, University of Maryland; F. Jennings, Ocala, Florida; F. G. McLarty, Duke University; C. B. McMullen, Centre College; D. Meiklejohn, College of William and Mary; E. C. Milner, Guilford College; E. F. Möller, Sweetbriar College; G. A. Morton, Jr., Duke University; C. Mosier, University of Florida; R. S. Musgrave, Russell Sage College; E. Newbury, University of Kentucky; W. A. Owings, Textile Junior College; M. G. Rigg, Oklahoma A. and M. College; R. W. Russell, University of Virginia; F. C. Shepard, Guilford College; R. T. Sollenberger, Yale University; A. Waite, Rollins College; L. R. Witmer, Florida State College for Women; M. O. Wilson, University of Oklahoma; and P. Worchel, Florida State Hospital.

There was a loss of 3 members during the year: 1 member resigned in good standing and 2 members were lost through death (William McDougall of Duke University and Michael Demiashkevich of George Peabody College).

The report of the Treasurer was approved as read. Assets and receipts totaled \$1,261.99, expenses \$344.11, leaving a cash balance at the end of the fiscal year, April 3, 1939, of \$917.88. This represents a net gain during the year of \$42.80, the cash balance at the end of the fiscal year, April 9, 1938, having been \$875.08.

Professor A. G. A. Balz, Chairman of the Standing Committee on Philosophy, gave a report of the work which the Committee had undertaken during the year 1938-1939, together with a brief description of the problems which the Committee had outlined and proposed to study in the future. Professor Balz announced that one

of the objectives of the Committee was the investigation of the status of philosophy in southern institutions. Letters were sent to the heads of 122 institutions in the South for the purpose of securing from these authorities expressions of attitude towards philosophy from several points of view, and of eliciting indications of plans and policies relative to the teaching of philosophy. The Committee planned to make a study of the replies, 60 of which had been received from institutional heads at the time the announcement was made, and to present an informative report of the study to the Society at its next meeting.

A supplementary announcement was made to the effect that a new journal, *Philosophic Abstracts*, was to be established to cover the field of philosophy in all languages in which philosophy is cultivated and that the first number would appear in the Fall of 1939.

No formal report was made by the Standing Committee on Psychology.

Under the heading of unfinished business, 2 amendments to the Constitution, as approved and tabled in accordance with Article V at the Thirty-third Annual Business Meeting, were presented to the Society for its consideration and final action. The following amendments, relating to reinstatement of members and election regulations, were passed upon by the Society and became law:

Amendment to Article II, Section 2, of the Constitution:

"Any former member who seeks reinstatement must make application to the Council. If such a former member was dropped for nonpayment of dues he will be required upon re-election to pay such dues as he was in arrears at the time when he was dropped from the Society."

Amendment to Article III, Section 3, of the Constitution:

"Vacancies in all offices shall be filled at the annual meeting of the Society upon nominations made by the Council and by the members of the Society at its annual meeting."

Under the heading of new business, the Council offered to the Society the recommendation to rescind recommendation No. 2 (p. 488 of the published proceedings of the Thirty-third Annual Meeting), which reads:

"2. That the arrangement of the program for the annual meeting, as far as philosophy papers are concerned, be assigned to the Standing Committee on Philosophy."

The Society moved and passed to accept the Council's present recommendation to rescind the above quoted recommendation, made in 1938.

The Council recommended that Article II, Section 2, of the Constitution be amended to read as follows:

"Candidates for membership shall be proposed by two members of the Society and recommended by the Council before their names are voted upon by the Society."

The Society approved acceptance of the recommendation. Approval of the amendment was automatically tabled for final action by the Society at its next annual business meeting.

The Society passed a motion to appropriate the sum of \$50 to assist the Committee of the American Psychological Association concerned with the employment of displaced foreign psychologists.

On recommendation of the Council, the following new members were elected to the Society: L. W. Beck, Emory University; E. A. Becknell, Tampa, Florida; M. F. Burts, Spartanburg, South Carolina; P. W. Cobb, National Research Council; R. M. Flory, University of Virginia; A. D. Grinstead, Louisiana State University; H. G. McCurdy, Milligan College; D. H. Ramsdell, University of Alabama; A. C. Reid, Wake Forest College; A. D. Roberts, Greendale, Kentucky; C. B. Scarborough, Florida State College for Women; H. S. Smith, Duke University; M. G. Walker, University of Georgia; and J. Weitz, University of Virginia.

On recommendation of the Council, the following officers and members of the Council were elected by the Society:

President: Marjorie S. Harris, Randolph-Macon Woman's College; Secretary-Treasurer: Norman L. Munn, Vanderbilt University; Council Members: Lewis M. Hammond, University of Virginia (1939-1942); C. P. Heinlein, Florida State College for Women (1939-1942); L. O. Kattsoff, University of North Carolina (1939-1940).

A Council recommendation to accept the invitation of Tulane University as host institution for the 1940 meeting was approved by the Society.

Professor Buford Johnson, Chairman of the Committee on Resolutions, moved the following resolution:

"Be it resolved: That the Southern Society for Philosophy and Psychology expresses its great appreciation to Duke University, the University of North Carolina, and the Local Committee for their cordial hospitality and the excellent arrangements made for this thirty-fourth meeting of the Society."

The motion was responded to with a rising vote of approval, and the meeting was adjourned.

PROGRAM

FRIDAY MORNING SESSION, APRIL 7

PHILOSOPHY

CHAIRMAN, ALBAN G. WIDGERY

The Concept of Wholeness in Ethics. LEWIS W. BECK, Emory University, Emory University, Ga.

Like the biologists and psychologists who have had to supplement their analytical investigations with reference to the properties of wholes, the moralist must consider wholes of value as conditions in the evaluation of single items of worth. The quantification of values with reference to certain abstractions, as though evaluations were independent of each other, is rejected in favor of the recognition of systems or wholes of value as the basis for choice. But the appeal to a whole as a condition of the properties of parts is significant only if there is an objective criterion of wholeness. This is found in a "Principle of Inhomogeneity," which is like, but broader than, Moore's "Principle of Organic Unities." As in Moore's concept of whole, there is an appeal to intuition, but this theory differs from Moore's in holding that the values of objects may depend in part upon their relations, and for this dependence certain criteria are suggested.

Religious Values. W. PRESTON WARREN, Furman University, Greenville, S. C.

The problem of religious values is among the most unsettled in the total field of values. Defining values as validities, however, it is possible to distinguish both religious validities and invalidities from a number of approaches. Following Macintosh and others, one may demark moral, aesthetic, social, political, hygienic, and intellectual, besides distinctively religious values in religion at its best. Uncertainty is greatest concerning the intrinsically religious values. Scheler, Otto, Leighton, Brightman, *et al.* set the problem in relief. But essential phases of religion (faith, vision, and devotion, in their cosmic reaches) show the genius of religious values. Religions and philosophies are functions of each other. Religious values are the values from man's consciousness of cosmic loyalties, functions, and relations (his trust in goodness and in God, and loyalty to what he takes to be the cosmically highest). God is highest of all values, but not the greatest value. The kingdom of God includes God and all

other positive values. Religion not only has its own distinctive values, but it is singularly productive in *Strahlwerte*.

Individualism in the Philosophy of Nietzsche. GEORGE ALLEN MORGAN, JR., Duke University, Durham, N. C.

Against the crude view of Nietzsche as an apostle of violence, deaf to spiritual values, and against the subtler conception of him as an extreme individualist, I hold that individuality is one of his supreme values, yet neither universal nor absolute. The cardinal principle of his social philosophy is *Rangordnung*, the recognition of many grades of human nature, each with its own appropriate ethic. Of these, the highest consists of "individuals," not in the trivial logical sense, but in the distinctive sense: "integrity of independent, self-contained personality." Such beings are rare, and Nietzsche's individualism is for the select few only. Nor are they splendid savages: They arise preëminently as heirs of a ripened social discipline, of a corporate life whose accumulated riches they incarnate. But *when* they arise they have still to make, each for himself, the transition from sociality to perfected individuality. For this purpose the moral philosophies of the past have at best been delusive group-moralities in disguise. In their stead Nietzsche formulates an "individual morality" proper, whose chief imperative is: "Become what you are," and whose culmination is a life in which freedom and necessity are one, an Apollinian god appearing within a Dionysian World.

A Precise Meaning for Objective and Subjective in Value Theory.

HAROLD N. LEE, Sophie Newcomb College, New Orleans, La.

If value and being valued are the same thing, value is subjective. This offers no definition of "subjective," however. Many persons suppose, then, that if there are unappreciated values, values must be objective; but this offers no definition of "objective." Neither can the terms be defined by speculating about what would exist if no consciousness existed.

"Objective" can best mean: granted the existence of a consciousness, the *sufficient* conditions of the experience of value are independent of the reactions of that consciousness. "Subjective" can mean: granted the existence of a stimulus, the *sufficient* conditions of the experience of value are to be found in the reactions of consciousness to that stimulus.

If one defines "objective" and "subjective" in these ways, it is apparent that inescapable considerations stand in the way of defining

value in either term alone. Objective conditions are necessary, but not sufficient. Subjective conditions are necessary, but not sufficient. The experience of value requires a definite relation between the 2 sets of necessary conditions. Although the experience of value depends upon this relation, value is defined as a potentiality. Thus, value and being valued are not the same thing.

Factual and Valuational Judgments in Ethics. HELMUT KUHN,
University of North Carolina, Chapel Hill, N. C.

According to a widely accepted view, the ethicist must first establish the facts of human conduct and then, in a second phase of his work, relate these facts to values. I propose to point out that a dualistic method, which strictly separates the realm of facts from the realm of values, is inadequate. As a criterion may serve the questions: What is an action? Wherein does its oneness consist? First, the action must be marked off against its consequences. To draw this demarcation line we have to recur to the idea of responsibility, thus availing ourselves of an element of valuation. In the second place, an action must be distinguished as one and as distinct from others within the series of actions making up the whole of a human life. This leads to the supposition of different classes of actions with respect to their greater or lesser comprehensiveness in such a way that each class corresponds to a specific layer of personal life. Such a discrimination of various strata of activity differing from each other in 'depth' is again not to be conceived without an admixture of valuation. The conclusion is: The horizon, within which we have to define the basic notions of ethics, is circumscribed by a total conception of human life—a conception which cannot be classed with factual statements.

PSYCHOLOGY

SECTION I

CHAIRMAN, JOHN FREDERICK DASHIELL

Laboratory Exercises in Animal Behavior. EDWARD NEWBURY,
University of Kentucky, Lexington, Ky.

Difficulties standing in the way of student exercises for a laboratory course in animal psychology include the necessity for technical skill on the part of experimenters in controlling distraction, the large number of animals required, the successive long periods needed to

complete single experiments, and the decline in motivation of an animal when given numerous rewarded trials in quick succession. With the white rat these difficulties can be largely overcome by proper selection and planning of experiments for class purposes and by requiring the animal to escape from water in the experimental situation. Based on wading or swimming, the method has been found applicable to a variety of student experiments exhibiting principles and techniques in learning, discrimination, orientation, work, and motivation. Initial swimming behavior and reflexes in infant and adult rats permit the study of developmental factors. Other experiments extend the course work to problems in which the water technique is not feasible. Each experiment can be performed in a single laboratory period. Procedure and apparatus can be simple, an omnibus tank serving several exercises.

Tests of Imitation in Chimpanzees. JAMES H. ELDER, Yale Laboratories of Primate Biology, Orange Park, Fla.

Formal tests of imitation in animals rarely provide clear evidence of the existence of such ability. Failure to secure positive results may be due to specific features of method which cause lack of motivation, lowered attention, or excessively abstract relations between the essential acts and the goal. This report describes some simple tests which have been used in the study of imitation in chimpanzees. Results indicate that dominance status may be important in determining the relative ease or difficulty of learning a problem. Several subjects achieved success after 1 demonstration, while others failed to learn after repeated demonstrations. It appears that learning occurs more quickly when the demonstrator is dominant over the imitator.

The Relative Effectiveness of 2 Conditioning Procedures. NORMAN L. MUNN, Vanderbilt University, Nashville, Tenn.

Two groups of white rats, matched for age, sex, and genetic constitution, were subjected to diverse conditioning procedures in an electrified tambour-mounted cage. The 26 animals of one group escaped a shock if they responded sufficiently early to a light which preceded onset of the shock by 2 seconds. The 26 matched animals of the other group always received a shock, regardless of response to the light. Kymograph records for each animal were analyzed in

terms of the number of trials, shocks, and anticipatory responses prior to achievement of 5 and 10 successive anticipatory responses.

The 2 groups did not differ significantly in number of trials required to reach these criteria. Animals which escaped shock, however, required significantly fewer shocks and made a significantly greater number of anticipatory responses than did those which received shock at every trial.

Vincent acquisition curves for anticipatory responses show a rapid initial rise followed by a slow one. Their shape is similar, regardless of the conditioning procedure—perhaps an argument for the essential similarity of the functions involved. The slope of the curve was greater for the achievement of the high than for the achievement of the low criterion of conditioning.

The Effects of Regularity of Stimulation in Conditioned-Response Learning. JAMES S. CALVIN, Yale University, New Haven, Conn.

Recent attempts to study effects of distribution of practice in conditioned-response learning have effected distribution by 2 means: (1) by lengthening or shortening the temporal interval between successive presentations of paired stimulations, keeping rate of stimulation regular; (2) by irregular stimulation, altering the average length of the temporal interval.

Both methods have yielded results indicating advantage of longer intervals for conditioning. Explaining these results in terms of distribution of practice overlooks the possible importance of regularity of stimulation; even objectively regular intervals may differ in apparent regularity to the subject.

The present experiment attempts a test of the regularity factor in the conditioning of an eyelid response. Three groups of 20 human subjects each were employed. Groups A and B received paired stimulations at regular intervals; the interval between successive presentations was $3\frac{1}{3}$ seconds for Group A and $6\frac{2}{3}$ seconds for Group B. Group C received paired stimulations at irregular intervals of either $3\frac{1}{3}$ or $6\frac{2}{3}$ seconds, in random order.

Results indicate superiority in conditioning for Group C (irregular) over Groups A and B (regular).

Implications for the following theories are discussed: perseveration; stimulation-maturation; temporal conditioning; negative attitude; work decrement; interference; boredom or monotony.

The Goal Gradient in a Circular Pathway. A. DUDLEY ROBERTS,
University of Kentucky, Lexington, Ky.

Both goal and start have been emphasized in interpreting the goal gradient in learning. To test the influence of each, 12 white rats were electrically timed in swimming 6 successive quadrants of a circular tank for 9 trials.

In Group A each animal was started always from the same segment, thus passing through the entrance and goal segments before concluding the trial. In Group B a paired animal started each successive trial in different segments.

The effect of place cues is indicated by a marked greater slowing up among Group A on first passage through the goal segment, an effect decreasing in later trials. In contrast, Group B indicated an influence related to the start or to distance traversed. The distance cue was further indicated by the slowing up of this group in the final goal segment when allowed to traverse 2 additional segments on the ninth trial.

An explanation is offered in terms of learning as adjustment in relation to a variety of cues and by the tension-relieving effects of the progressive responses to the cues.

The Effect of Early Isolation of White Rats on Competition in Swimming. A. G. BAYROFF, University of North Carolina,
Chapel Hill, N. C.

Two sets of white rats, one reared in individual cages, the other reared in groups, were forced, 1 at a time, to swim under water and against a current. The animals were then paired, each pair containing 1 animal reared in isolation with an equally fast socially reared animal. Each pair was made to swim, the animal reaching the exit first being allowed to escape into the air. The second animal was trapped under water for a short time before it was permitted to escape.

The results indicated that the number of solitarily reared victors was equal to the number of socially reared victors. In a small number of pairs neither member won consistently. It appears that in this experiment the nature of the early life is not the principal determiner of success in competition.

Other factors, such as weight, sex, etc., do not appear to be the principal determiners. Significant changes in swimming speed occurred, both victors and losers showing such changes.

A Direct Comparison of 3 Methods of "Delayed Response." JOHN T. COWLES, University of Alabama, University, Ala.

As a working hypothesis, the animal behavior problem which has been typically called "delayed response" was treated here as *successive pairs of discrimination trials*, the first of each pair being a training trial without immediate food reward, the second being a test of retention in a somewhat altered situation followed by food reward. An apparatus was devised which permitted the incorporation within 1 unit of any of several types of *training* procedure, yet preserved a relatively constant *test* procedure. The subjects were young albino rats, all of which were first given thorough training on a simple black-white discrimination in a Y-shaped box. Each subgroup of 30 animals was then given a different type of training trial, but the same type of test trial in each successive pair of trials. Various scores clearly indicated that the closer the response allowed in training trial approximated the response allowed at test after delay, the better the retention. The significance of the relation of pre-delay and post-delay responses is therefore emphasized—a factor which may account for the discrepancies in limits of retention of this species as shown by previous experimenters. These and other observations suggest the fruitfulness of this experimental treatment toward understanding "delayed response" as essentially a discrimination-learning and transfer problem and not a unique type of "symbolic" behavior demanding unusual "representative factors."

SECTION II

CHAIRMAN, KARL E. ZENER

Is Infant Behavior Appreciably Affected by Cultural Influences? WAYNE DENNIS, University of Virginia, University, Va.

In the tribal culture of the Hopi Indians, the infant receives a treatment which differs in many respects from that given to the white American child. The Hopi infant is subjected to restraint through the process of cradling; he is always in the presence of an adult or an older child; he nurses throughout the first year or longer; he receives no elimination training during the first year; and he receives a minimum of discipline, especially with respect to being warned against damage of household equipment and other aspects of the material culture.

The author's field notes and observational data show that in spite of these cultural differences, infants among the Hopi exhibit the same

social and motor responses as do American infants. Positive social responses appear at the same age in both cultures, and shyness and fear of strangers likewise appear at the same age levels. Other reactions likewise are entirely comparable.

The bearing of these findings on the question of the locus of cultural effects in the individual life history will be discussed.

A Study of Conditioning in the Neonate. DELOS D. WICKENS and CAROL WICKENS, Ohio State University, Columbus, O.

Subjects were under-ten-day-old infants, born in Ohio State University Hospital. The conditioned stimulus was a buzzer; the unconditioned stimulus, a shock to the sole of the foot, resulting in a specific "withdrawal" movement. If any infant responded to the buzzer alone before the conditioning procedure, he was rejected. The experimental group (12 subjects) received paired stimulations of buzzer and shock, 12 per day for 3 consecutive days. At the end of day 3, the buzzer alone was sounded until extinction of any response. On day 4, the presence of spontaneous recovery was checked. The control group (12 subjects) received 12 shocks *alone* on 3 consecutive days. Responses to the buzzer alone were tested for in the same manner as in the experimental group. Results of the 2 groups were highly similar, both showing clear-cut responses to the buzzer alone at the end of the third day, as well as phenomena of "extinction" and "spontaneous recovery"—this, although the control group had never had a paired stimulation of buzzer and shock. These results make somewhat questionable previous claims for the presence of the usual type of conditioning in neonates and below.

Shorthand in the Education of a Deaf-born Child. MAX F. MEYER, University of Miami, Coral Gables, Fla.

Fifty years ago Alexander Graham Bell pointed out that, in order to learn to speak, a deaf child should have a phonetic guide other than that furnished by lipreading and by conventionally spelled printed words. Even to the person who already has a vocabulary, lipreading furnishes, at best, barely half the speech sounds. And English spelling is absurdly unphonetic. So he proposed that the speech teacher furnish the child for its guidance phonetically written words of the English language. Reading words in English spelling would come much later, just as it comes long after the normal child has acquired a speech vocabulary. For very good reasons Bell proposed that the phonetic symbols used for writing should be shorthand

symbols rather than any other kind of phonetic "letters." Bell tried this educational experiment for 1 year. But being unable to find a teacher patient enough to continue it, his experiment remained inconclusive. Forty years later I became interested in this problem of educational psychology. And I have been working on it continuously for these 10 years. My conclusions are that Bell's idea is entirely sound; the educational method is entirely feasible; and it is a pity that the routiniers making up the rank and file of the teachers of the deaf have all these years been entirely impervious to Bell's suggestions.

The Development of Animistic Concepts in the Child. R. W. RUSSELL, University of Virginia, University, Va.

Interest in the experimental study of child animism has received considerable impetus from the publications of Piaget. Russell and Dennis have described a standardized method which makes it possible to classify children into the 4 stages of animism discovered by Piaget and, by so doing, permits an objective study of the development of animism. This method has been employed in studying 774 children, 361 of whom lived in a large northern city, 200 in a less thickly populated southern "suburban" area, and 213 in a southern "rural" district.

A consideration of the data seems to warrant the following summary of results: (1) It is possible to classify individuals into the stages of animism suggested by Piaget; (2) it is probable that individuals pass sequentially through the series of concept stages with increasing mental and chronological age; (3) although the fundamental validity of Piaget's classification of concept stages has been proven, the data have revealed the impossibility of limiting the age range of the stages as Piaget has attempted to do; (4) the development of animistic concepts is very nearly the same for all 3 experimental groups, despite their varied geographical locations and socio-economic status; and (5) there are no significant differences in the development of the animistic stages between the male and female subjects in any of the 3 groups.

A Study of the Adjustment Behavior of Elementary School Children.

WILLIAM M. HINTON, Washington and Lee University, Lexington, Va.

Two methods of measurement were utilized: (1) an objective check of the child's behavior under everyday frustrating conditions,

based on ratings, and (2) a record of his reactions to experimentally controlled thwarting situations. Eighty-seven children were rated, and 51 of the rated group served as subjects for the experiments. An analysis of the results shows in part: (1) Marked individual differences exist in the adjustive tendencies of elementary school children; (2) the prevalence of "regressive" tendencies as compared to other types of adjustment is indicated; (3) no difference is shown between boys and girls in "subterfuge" behavior—the data suggest, but do not prove, that "regression" tendencies are more prevalent among girls and "tension" tendencies among boys; (4) no significant relationships are shown between mental age and any type of adjustment tendencies; (5) the ratings do not prove but suggest a decrease in "tension" and "subterfuge" and an increase in "regression" with each year in school. Finally, split-half and rerating correlations show that the rating method employed is a reliable technique for the investigation of adjustment tendencies, and that, when the results of the ratings are used as a criterion, the experiments are valid measures of the adjustment behavior tendencies of young children.

The Concept of Adolescence. RICHARD T. SOLLENBERGER, Yale University, New Haven, Conn.

Evidence is presented to further the hypothesis that adolescent behavior is a biosociological phenomenon and that the classical term, "adolescence," must be redefined as a behavior pattern rather than as a specific age-grouping in the life span of the individual.

The rapid physical, physiological, and psychical changes that occur at pubescence necessitate a reorientation and an adjustment of the individual acquiring adult capacities. "Adolescence" is an adjective descriptive of the manner of adjusting which deviates from the adult norms of behavior. The appearance and the duration of adolescent behavior are dependent upon the culture in which it is observed and upon the age of the pubescent individual.

The Social Adjustment of the Under-age High School Pupil and College Student. MITCHELL DREESE, George Washington University, Washington, D. C.

The purpose of this investigation is to determine the degree to which acceleration in high school and college results in social maladjustment.

The under-age pupils in 2 large Maryland high schools adjacent to Washington, D. C., were compared with the normal and over-age

pupils on the following factors: (1) score on the Symonds' Adjustment Questionnaire, (2) membership in clubs, (3) elective offices held, and (4) teacher ratings of social adjustment.

An analysis was also made of the relationship between physical size and social adjustment of the under-age pupils.

A subsequent study of the under-age students in the George Washington University was then made to determine whether, in their opinion, they were handicapped by their chronological immaturity.

The data indicate that the under-age pupils in high school excel the normal and over-age pupils on all 4 criteria. Preliminary tabulations of the college data suggest that approximately 75% of the under-age students are not cognizant of any handicap attributable to their age.

Apparently, the present fear on the part of the school administrators concerning the acceleration of pupils is not substantiated by objective evidence.

FRIDAY AFTERNOON SESSION, APRIL 7

PHILOSOPHY

CHAIRMAN, GEORGE THOMAS

The Relation of the Aristotelian Categories to the Logic and the Metaphysics. K. K. BERRY, University of Virginia, University, Va.

In Aristotle's *Metaphysics* we find the assertion that one of the meanings of being is as it is divided into the categories. Certain concepts of the *Metaphysics*, derived from the natural science, are here held to be central: substance, becoming, potency, act, the 4 causes and fourfold analysis of change. Are the categories adequate to handle the operations of these metaphysical principles? The categories of substance, quality, quantity, and place bear the very names of the 4 kinds of change indicated; similarly in the case of potency and act. The apparently static character of the categories is due to the fact that they are used in predication. This can be shown by the fact that we may substitute the verb 'to become' for the verb 'to be,' following it with terms subsumed under each of the categories. The categories, therefore, are not 'deduced' from an analysis of the meanings of the verb 'to be' but rather from the world of change. Consequently, they bridge the gap between the properly dynamic

nature of the natural sciences and the Metaphysics and the necessarily static, because conceptual and abstract, character of the logic.

The Schema of Levels in Progression. FREDERICK W. MEIER, Louisiana State University, Baton Rouge, La.

Distinct from the familiar "subject-object problem" is a knowledge-situation which is to be conceived under the general problem: How does man attain knowledge of a thing in process? A misconception of the situation is evident when knowledge of a process and knowledge of an object *in statu quo* are taken separately, because thing and process constitute one object of inquiry or investigation. This peculiar object gives rise to a problem of levels in cognition theory and methodology. Familiar versions of scientific method are inadequate to the task undertaken. There is no evolutionary method of discovery. The basic conception of the subject matter under investigation, which is maintained throughout from the beginning, is the idea of development or progression from within. But comparisons and classifications of similarities and differences take place in cross-sectional sampling and analysis of whatever materials are available. The status of a cross-sectional sampling and analysis in a systematic treatment of anything in progression is that of a plane set from a criticological standpoint, as if the subject matter under investigation were timeless and static. The schema as a whole represents both quantitative and qualitative differences in the same subject matter, maintaining degrees of differentiation as continuous throughout, while levels differ from each other qualitatively. A hierarchical arrangement of levels is necessary to represent the whole as progressing in some direction.

The Field and Method of the Philosophy of Science. C. K. DAVENPORT, University of Virginia, University, Va.

In attacking the general problem of the definition and scope of the subject I shall first consider some confusions which seem to have lead to serious misunderstandings of the function of the Philosophy of Science (confusions which have lead to attempts to identify it with the History of Science, with Cosmology, with Logic, with Mathematics, or with any of the special branches of science, *i.e.* with Science itself).

Then I shall propose an interpretation of what I believe to be its positive function as a discipline and as an organized program of inquiry among many subject matters. This will involve the question

of whether metaphysical first principles come at the beginning or the end of scientific inquiry. Finally, I shall suggest the possible results of such a program in a concrete case.

Metaphysics and the Scientific Method. GEORGE TODD KALIF, 1441 Calhoun Street, New Orleans, La.

The success of the scientific method and the tendency of metaphysics to facility of explanation are understandable bases for emphasis upon method and for consciousness of the limitations of metaphysics for the purposes of science. Nevertheless, methodical obscurantism emerges from overemphasis on the routine which results from crystallization of method. This is most clearly seen in the setting up of scientific method as determining subject matter as well as meaningfulness in philosophy. Scientific method becomes constitutive and inflexible, thus becoming impervious to the influence of new ideas. It, then, represents a grasp at dogmatic finality. History, however, teaches that truth is approached asymptotically. In this process, metaphysics plays a rôle, for it is a reaching-out for broader and more general ideas. It represents the urge toward a more comprehensive vision of the universe, the urge toward greater values in new experience. Hence, it outstrips method, which is of itself prone to routine and degeneration; but metaphysics represents one phase of thought, the speculative, and method another phase, the practical. The two work together, metaphysics vitalizing method, and method determining the extent of the pragmatic value of metaphysics. This is a cooperative enterprise in the achievement of a more satisfying experience.

Examination of a Logical Positivist. PETER A. CARMICHAEL, Louisiana State University, Baton Rouge, La.

The views expressed in the book by Alfred J. Ayer, entitled *Language, Truth and Logic*, are the subject of this examination. Two of these views are especially considered: the first, that metaphysics is totally without meaning and that it is due to loose thinking—more especially to failure to understand grammar; the second, that value judgments are neither true nor false, but are only wishes or commands. Why do the propositions of logic and mathematics have binding force, and how is the regularity of natural phenomena explained, if metaphysical ground and principle are repudiated? Mr. Ayer says the explanation is found in our definitions, which, in turn, are due to convention. Here, it is argued that convention wholly

fails to explain, since it only supplies a substitute set of data without accounting for the rigor of definitions. With regard to value judgments, it is similarly argued that they require a ground and that the phenomenalism of Mr. Ayer fails to supply this.

PSYCHOLOGY

SECTION I

CHAIRMAN, A. G. BAYROFF

Proprioception and Vibratory Sensitivity. JOSEPH WEITZ, University of Virginia, University, Va.

Although the receptor mechanism for vibratory sensations has, in the main, been relegated to 1 of 3 categories, pressure receptors, bones, and periosteum, or special vibratory receptors, another possibility has been suggested by Cohen and Lindley. They state: "It may be true that vibration and proprioception are merely quantitatively different aspects of the same sense-modality . . ." They deduce this from the alleged fact that vibratory thresholds are raised when kinesthetic strains are present, thus diminishing the possibility of stimulating the same fibers with vibratory impacts.

In the present study there is an attempt to investigate the influence of various intensities of kinesthetic sensation on vibratory thresholds with rigorous control applied to the stimulating conditions. It would seem that any changes in threshold, ensuing from the presence of kinesthetic sensations, are explicable on the basis of their serving as distracting, attention-demanding stimuli in competition with the vibratory stimulus. There appears, therefore, no need to assume common mediation for vibratory and kinesthetic sensations.

Vibration Spots and Their Underlying Tissue—A Preliminary Report. B. VON HALLER GILMER, Carnegie Institute of Technology, Pittsburgh, Pa.

Of the enormous literature concerned with the sensitivity of the body to vibratory stimulation, no consideration, other than speculative, has been given to the possible receptors of vibration. Most recent investigations have concurred with the early views of Von Frey that vibratory sensibility is mediated by the cutaneous pressure receptors, but of these we know little. The evidence from cutaneous excision experiments, both direct and indirect, designed to determine the receptors underlying temperature, pain, and touch "spots," has,

on the whole, been inconclusive. Consideration is given to these investigations in light of the present preliminary report, which describes the methods used in locating and excising vibration spots, together with an histological description of the tissue underlying them.

Configurative Effects in Binocular Interdependence. S. RAINS WALLACE, JR., Tulane University, New Orleans, La.

In previous papers the author has reported a number of phenomena which indicate the existence of a dynamic interdependence in the binocular pathways. One of these phenomena also demonstrates that the interdependence effect is a function of changes in the configuration of the visual field and is independent of brightness changes or of shifts in accommodation, convergence, or fixation. Thus, the problem is raised concerning what difference between the underlying neural processes may be invoked to explain this functional difference between configured and unconfigured fields.

A series of experiments which indicate that configuration is mediated by a different neural mechanism than brightness or, perhaps, color is discussed. The work of other experimenters who have reached similar conclusions is reviewed, and a simple stereoscopic experiment which suggests that present concepts of form are inadequate is demonstrated.

The Effect of Temperature Upon Typical Potential Changes, or C. E. S. in the Spinal Cord of the Frog. CECILE BOLTON FINLEY, University of Virginia, University, Va.

The work of Matthews on cord potentials (April, 1938) is briefly reviewed. An investigation is reported of the effects of temperature upon the normal wave-form of the potential change, found by Matthews to be set up whenever a single volley of impulses enters the cord and to spread to the dorsal roots where it can conveniently be measured. Photographs are reproduced of the potential changes taking place in the cord of *Rana esculenta* at various temperature levels, showing the variations which occur in the latency of the change and in its rising and declining phases. Curves relating temperature with latency, with time to crest, and with time for 25% and 90% of the change to subside are presented, exhibiting in each instance a decrease in time with rising temperature, but a difference in the form of the first named (latency-temperature curves) and the latter curves. Temperature coefficients presented also exhibit dif-

ferences, and the conclusion is reached that the processes responsible for the initial delay and the subsequent development of the potential changes, or central excitatory state, in the cord are different in nature, the former due perhaps to a single chemical process and the latter to more complex processes.

A Study of the Factors Determining Discrimination of Size by the White Rat. ROBERT M. FLORY, University of Virginia, University, Va.

In a number of studies, attempts have been made to show that discrimination between paired stimuli which differ only in degree is based upon either relation or absolute cues. Recently, Spence has attempted to explain such behavior by the use of conditioning principles.

In this experiment, 18 white rats were trained to go to either the larger or the smaller of 2 white squares when presented together. They were then presented with other pairs which bore the same ratio to each other as the training pair, but which differed in absolute size.

It was found that the tendency to respond on the test in a manner consonant with the training (*i.e.* to the larger or to the smaller) is a function of the degree of similarity between the 2 pairs. A theoretical interpretation in terms of conditioning principles is given.

SECTION II

CHAIRMAN, WILLIAM A. BROWNELL

A Psychometric Study of Meaning. CHARLES I. MOSIER, University of Florida, Gainesville, Fla.

Three hundred adjectives, expressive of judgments of favorableness or unfavorableness, were selected from Thorndike's *Word List* and presented to 150 college students for judgment as to degree of favorableness or unfavorableness expressed. Judgments were made under the instructions appropriate to the method of Equal-appearing Intervals and data treated by the methods of Equal-appearing and Successive Intervals. The data, in general, conform to the *as if* hypothesis that meaning is composed of 2 components, 1 fixed for all subjects and 1 which varies in the manner of random errors from individual to individual. The distributions of responses for

nearly all words project Gaussian distributions on the same continuum.

Analyses of meaning and of the act of judgment are presented. Certain unanticipated results indicate that favorableness and unfavorableness are qualitatively distinct rather than quantitative variations along a single continuum.

The Effect of Partialling on the Thurstone Factor Method. W. J. E. CRISSY, University of North Carolina, Chapel Hill, N. C.

Five variables with known factor loadings (obtained in a factorial analysis elsewhere reported*) were refactorized by the same technique as used in the original problem, for testing the property of "invariancy of factor loadings." Also, a factorization of 4 of these variables was made, the fifth being partialled out of each of the others prior to the application of the factorial procedure. These 2 factorizations, one with the original variables unaltered, the other with age partialled out of the original variables, were made with the hope of showing empirically, in an admittedly limited problem, (a) "invariancy of factor loadings" and (b) the effect of partialling on factor loadings. Results obtained indicate (a) invariancy of the original loadings and (b) no significant effect of partialling on the original loadings. As an addendum, the relationships herein treated were compared with results of the same sort from a Kelley factorization of the same data.

Factor Analysis of Music Tests. RALEIGH M. DRAKE, Wesleyan College, Macon, Ga.

All tests having reliability coefficients of over .31 were selected from a total of 20 music tests for the purpose of factor analysis. The Spearman tetrad-difference technique was employed. Five of the tests were from the Seashore battery and consisted of Pitch, Rhythm, Intensity, Time, and Tonal Memory; 1 test, Tonal Movement, was from the Kwalwasser-Dykema battery; and 2 were constructed by the author and were called Musical Memory and Retentivity. One common factor for all 8 tests was found, but group, or specific, factors to the number of 3 and involving 4 of the tests are shown to be present. Two other minor group factors exist, but are considered to be of slight significance. A suggestion is made as to the nature of the common factor.

* Richmond meetings of the A. A. A. S., December, 1938.

The battery is also analyzed after breaking it down into 2 groups. One group involves only the 5 Seashore tests, and the other group includes only the 3 tests which have satisfactory validity coefficients.

An Approximation Method for Obtaining a Maximized Multiple Criterion. ROBERT J. WHERRY, University of North Carolina, Chapel Hill, N. C.

Horst and, later, Edgerton and Kolbe developed methods for obtaining maximized multiple criteria. Based upon different assumptions and differently developed, the methods resulted in an identical formula. An approximation method was also given by Horst, due to the extreme tediousness of the method. Edgerton and Kolbe, however, showed that for their example the Horst approximation technique yielded results quite at variance with the actual weights.

The present paper gives a derivation of a new approximation technique. It is shown that separate formulae are needed, depending upon the sign of the average value of the intercorrelation coefficients. The formulae are shown to give adequate approximations for both the Horst and the Edgerton and Kolbe examples.

Comparison of Measures of Tendency-to-Continue. DOROTHY RETH-LINGSHAFFER, University of North Carolina, Chapel Hill, N. C.

Fifty-eight children were given 11 tests of tendency-to-continue as measured by behavior following interruption, and these tests were then evaluated by various statistical criteria. By applying the Thurstone multiple factor technique to the intercorrelations between the tests, 2 centroid factors were found sufficient to account for the size of the intercorrelations. The tests were therefore evaluated in terms of the communality coefficients of the first largest factor after rotation. One test was selected as representing the best measure of tendency-to-continue an activity as indicated by behavior following interruption.

On the basis of this analysis with the 11 tests used with children, 2 other tests measuring behavior following interruption were made and given to college subjects. Added to these measures of tendency-to-continue were 20 other measures of resistance to change, 9 being tests of perseveration, 9 of persistence, and 2 of attitudes. An intelligence test was also included in the battery. A preliminary report is given on the latter study with college subjects.

SATURDAY MORNING SESSION, APRIL 8

PHILOSOPHY AND PSYCHOLOGY

CHAIRMAN, FRANK A. GELDARD

Plato and the Dilemma of Literary Criticism. IREDELL JENKINS,
Tulane University, New Orleans, La.

Plato censored art. In doing so, the heart of his argument must have been this: Art which is directly imitative must be so indirectly; if a situation is represented, the passions proper to this situation must be conveyed; art, then, must have effects on character and repercussions in action; some of these are good, some bad; so art must be censored.

We would reject Plato's conclusion theoretically, and we do reject it in practice. But there is less agreement as to what to do with the premises. The modern attitude is summed up in the legally accepted doctrine that art and literature cannot be obscene. This establishes practice, but it hardly establishes theory; rather, it exposes a difficulty and a question. The difficulty is that only by a minority will works of art be seen as such, and so purely; then, what to do about the majority, to whom they will be obscene? The question is: How can any work be directly imitative and not also indirectly so?

This paper attempts to justify both Plato's sponsorship and modern rejection of censorship in terms of different social conditions and to expose the imitative dilemma by a consideration of the act of appreciation.

The Place of Philosophy in the Changing Curriculum. MARTEN
TEN HOOR, Tulane University, New Orleans, La.

(1) The first task of this essay is to establish, to the extent to which this is possible and permissible, stable meanings for the terms "philosophy" and "liberal arts curriculum"; the second task is to establish a relation between them which is not only justifiable in reason but realizable in educational practice. All the subjects of the traditional curriculum can, within limits, be arranged in a logical hierarchy, in accordance with the principle of degree of inclusiveness of concepts and principles. The philosophical disciplines can be located in this scheme with considerable exactness and their logical relationship to other subjects and groups of subjects exhibited, *e.g.*

ethics as basic to the social sciences, aesthetics to the arts, metaphysics as most inclusive from the standpoint of content, and logic as most basic from the standpoint of method. (2) No curriculum can completely "realize" this scheme, partly because it is an ideal one and partly because of the influence of ulterior motives in curricular organization. Nevertheless, the scheme is useful as a guide. Departments of philosophy might well make some effort to apply this principle in determining the order in which philosophical disciplines should be pursued by students specializing in philosophy. (3) Contemporary experiments in curricular reorganization can be evaluated in the light of this scheme. Many curricular changes seem to be more apparent than real. Of the 3 variables, student, system, and instructor, the system is the least important, for the inquiring mind needs no detailed directions for the pursuit of truth. Yet some recent changes—for example, from the departmental to the divisional scheme of curricular organization—are useful because they emphasize the logical relationship of the philosophical disciplines to other subjects.

Are There Any Individuals? HERBERT SANBORN, Vanderbilt University, Nashville, Tenn.

In the perennial discussions for and against the reality of Universals, the reality of individuals has regularly been accepted without scruple, in spite of trenchant assertions, like that of Duns Scotus, that the individual is an unknowable. *Ratio singularitatis frustra quaeritur*; the *quidditas* may be caught in our intellectual nets, but the *haecceitas* slips through the meshes. Doubtless, the individual has often been conceived quite as abstractly as the infamous universal, with neither idol of the forum capable of existence. The attempt of typical idealism to avoid this fallacy of abstraction does not, however, in its concretion of universal and individual, provide apparently for more than 1 individual; the rest disappear in, or into, the maw of the universal. The individual of vitalism is also inadequate.

Without attempting to settle whether, or how, the existence of individuals can be established or whether they be one or many, it is argued here from logical and psychological considerations that there are no individuals in one common acceptation of this term, while real individuals must be conceived, as with Lotze, Bowne, and the late Wilhelm Stern, under the form of "person," without its being necessary to accept the special application and extension of the term in the systems mentioned.

Rival Principles of Causal Explanation in Psychology. H. M. JOHNSON, Tulane University, New Orleans, La.

Many doctrines about causality presuppose some scientifically useless propositions. One is that if one event-complex, *P*, causes another event-complex, *Q*, then *P* temporally precedes *Q*. But given that *Q* cannot fail if *P* occurs, then *P* is sufficient for *Q*, and *Q* is necessary to *P*. Perhaps we can point to no actual instance of such an interdependence. But if Nature is orderly, then any event-complex of one instant is related to others in the same instant and also to those which occurred both before and after. These correlations, if completely stated, would express the laws of efficient causation, mnemonic causation, and telic causation, respectively. Practically, one can regard *Q* as a telic cause of *P* only after both events have occurred. Many psychologists promise to use efficient causation only, but actually refer to unformulated laws of mnemonic causation to explain association and learning and of telic causation to explain volitional behavior. But efficient causation has some serious limitations that do not arise out of our ignorance. We should try to formulate our laws of mnemonic and telic causation accurately and use them openly without shame. They supplement, without displacing, the laws of efficient causation.

Psychology as a Natural Science. W. S. WEEDON, University of Virginia, University, Va.

The question of the status of present-day psychology with respect to natural science is raised primarily by 3 features of its approach: (1) the acceptance of certain branches of physical science as yielding results directly usable by psychology, (2) the wide-spread adoption of the experimental techniques, and (3) the employment of a set of basic conceptions analogous to those of natural science. The problem is thus posed: Whether present-day psychology may, in fact, be regarded as a natural science, and whether certain fundamental difficulties inherent in contemporary physical science are actually to be discovered in psychology.

It is beyond the scope of this paper to treat the problem in detail, and attention is therefore restricted to the organs of sense as physical objects. The special mode of functioning which these objects exhibit must be related to their character as objects discriminated within Nature. The difficulty of stating this relationship has certain analogues in the case of physics, and its solution. (along one of several possible lines) vitally affects the question whether psychology is, in fact, a part of the science of Nature.

SATURDAY AFTERNOON SESSION, APRIL 8

PHILOSOPHY

CHAIRMAN, STEPHEN A. EMERY

Motse and Hobbes. MARJORIE S. HARRIS, Randolph-Macon Woman's College, Lynchburg, Va.

Motse lived in a time of political and social disintegration. His own humanitarianism prompted him to attempt to set right a time so out of joint. But the very urgency for remedial measures blinded him to the fundamental cause of the ills he sought to cure and defined for him very narrowly that *eudaemonia* it was his aim to foster. However, Motse was not the last man to defeat his real goal by an improvident practicality.

Our examination of Motse's measures for bringing about security will be facilitated by comparing his program with that of Hobbes. Both plans were based on the assumption that man is, by nature, egoistic. But Hobbes thought the sovereign alone could establish peace and prosperity, whereas Motse saw such an achievement as a coöperative enterprise. Yet each program would have failed if instituted. The rewards that were to stimulate endeavor could not have accrued to the people. The way of life designated for them could not furnish a satisfactory substitute for the unattained prizes.

Some Important Aspects of Individualism and Collectivism. WILLIAM E. FORT, JR., Winthrop College, Rock Hill, S. C.

The purpose of this paper is to bring out some of the important implicit and explicit characteristics that distinguish individualism from collectivism. There has been much confusion in the minds of both the educated and the uneducated concerning this subject. In an attempt to clarify this topic it will be useful to contrast these 2 opposed types of economic systems by setting up 2 hypothetical figures (Absolute Anarchism and Absolute Collectivism) in which the characteristics of each order are accentuated. The systems are then contrasted with reference to freedom of individuals, ownership of goods, coöperation, centralization, war and social coercion, and the definition or general conception of the State.

Soul as Process in the Philosophy of Plato. ANNA FORBES LIDDELL, Florida State College for Women, Tallahassee, Fla.

If literal translation of the Vision of Er indicates that Plato regarded the soul as an objective entity, the figure of the soul in the *Phaedrus* shows the absurdity of such a notion. In the *Cratylus*,

soul is described as that which holds and carries and gives life and motion to the entire nature of the body. The body is the instrument of the soul, and the two are united in one consciousness. Sensation stimulates the soul to reflection. Recurrence of similar sensations gives rise to speculation, in which soul exercises its peculiar function, that of recognizing Universals. It is questionable whether soul could know Universals unless first stimulated by sense impressions. The body seems to be the necessary instrument of the soul. Every bodily awareness moves the soul to feel pleasure or pain. The truly pleasant is the natural, which is the harmonious. Soul finds permanent enjoyment in exercising its own function.

Naturally, soul undertakes to control bodily activity so as to secure pleasure and avoid pain, more especially to cultivate its own activity. Pleasure and pain furnish soul with means and method for self-development. It is the faculty for enjoying life which lends itself to education; one pleasure is replaced by a more enduring pleasure, and the final goal is to attain the full satisfaction of a perfect life.

Philosophical Problems in the Interpretation of Indian and Chinese Doctrines. FRIEDRICH SPIEGELBERG, Columbia University, New York City.

The difficulties in trying to come to a right understanding of Eastern doctrines are only partly of a philological nature. They are found ultimately in the philosophical and psychological approach. Not only the ideas, but the very categories, are different in Orient and Occident. The study of foreign doctrines can show that the schematism of a categorical pattern, as, for instance, that of Aristotle or Kant, is only of relative validity, being valid within a specific anthropologically limited structure of consciousness.

These philosophical problems become even more complex because we are wont to see a contrast in any relation of our own mentality to another. Thus, ideas, rejected in Western culture, and projected into the picture of our shadow, "The East," increase the already existing difficulties of true interpretation.

This can be proved by an analysis of a number of typical misinterpretations of Indian and Chinese doctrines: *e.g.* we want the Indian "Maya" to be what "illusion" means to us; we usually translate the Chinese "Wu-wei" by "non-action." In both cases, as in many others, we have not achieved a real understanding of the Eastern mind. The difference in the oriental conception of time as a wheel, and the occidental, as a line, is one of the basic impedi-

ments which have to be overcome by strict analysis before we can even start a comparative study of Indian and Chinese doctrines.

The Causal Dilemma in the Mind-Body Problem. D. M. ALLAN, Hampden-Sydney College, Hampden-Sydney, Va.

The current revival of epiphenomenalism among physiological psychologists contrasts sharply with the tendency of philosophers of widely differing schools to defend interactionism in principle. A critical application of the inductive causal methods to the psychophysical facts gives no support to the elimination of conscious processes from a dynamical explanation of behavior. The persisting objections of psychologists to the dualistic and mystical implications of interactionism appear to rest upon: (1) eighteenth-century ideas of causal relations; (2) confidence in the future of neurological explanation; (3) methodological difficulties in the way of treating consciousness dynamically. Unless we continue to shield conscious processes in esoteric manner from the causal logic, there seems no other alternative than to admit that they are co-determinants of behavior and interpret this determination in terms of an organic-dynamistic conception of causality. The doctrine of levels has furnished us with a new setting rather than a solution to this problem. The interaction of levels seems a far more reasonable hypothesis than a multiparallelism of levels.

PSYCHOLOGY

SECTION I

CHAIRMAN, HELGE LUNDHOLM

Psychological and Sociological Factors Determining Man-caused Forest Fires. JOHN P. SHEA, U. S. Forestry Service; JAMES W. CURTIS, University of Kentucky; and HAROLD F. KAUFMAN, University of Missouri.

The purpose of this paper is to report 2 investigations in social psychology that were made, each with a different approach, toward a common end. The common objective was to determine the attitudes of forest residents toward the conservation of the forests, toward man-caused forest fires, and toward the regulations of the Forest Service as they affected the people in the forest areas investigated.

One study was made in Kentucky, the other in southern Missouri. The Kentucky investigation used a psychological approach.

A field study was made by James W. Curtis, graduate student in psychology at the University of Kentucky, who attempted to isolate and evaluate the psychological factors, favorable and unfavorable to forest conservation.

In Missouri a field study using a sociological approach was made attacking the same problem. It was conducted by Harold F. Kaufman, graduate student in sociology at the University of Missouri. Both researches were carried out during the Summer and Autumn of 1938.

In both areas it was found that attitudes, habits, folkways, and mores exist that give rise to man-caused forest fires which, in turn, seriously threaten the forest resources and the welfare of the people dependent on them for recreation and livelihood.

Criticisms of the 2 methods are made. Suggestions for remedial education on the part of the public are advanced and discussed.

Attitude-Interest Analysis of Florida State College for Women Students. DOROTHY ROSE DISHER, Florida State College for Women, Tallahassee, Fla.

The Terman-Miles Attitude-Interest Analysis Test, constructed to describe the masculine and feminine characteristics of groups, was administered to 556 students at Florida State College for Women. Taken as a whole, the group does not differ in masculinity-femininity reactions from a group of sophomore women students drawn from Stanford, Oregon, Washington, and Utah University populations. When the F. S. C. W. student body is grouped, on the basis of birthplace, into Florida natives, southern natives (exclusive of Florida), and northern natives, the Florida group, in contrast to the northern and western group, reveals a somewhat more feminine attitude and interest. This difference, while small, suggests that as the groups become internally more homogeneous for various cultural factors, they tend to draw apart with respect to the degree of femininity in attitudes and interests. The outstandingly feminine southern woman was not discovered in this study.

Values Scores in Predicting Vocational Interest Scores and College Grades. ELIZABETH DUFFY, Woman's College of the University of North Carolina; and W. J. E. CRISSY, University of North Carolina.

The Allport-Vernon Study of Values and the Strong Vocational Interest Blank for Women were administered to 108 freshmen at Sarah Lawrence College. Relationships between the 2 measures and

between the values scores and college grades were investigated by correlational techniques and by the comparison of upper and lower thirds. In general, the 2 procedures yielded similar results, though certain exceptions are noted. There were a number of significant correlations, in the expected direction, between vocational interest scores and values scores. College grades showed a consistent, but slight, relationship to certain values scores. These values scores, when weighted and combined, correlated with grades as closely as did the scores on the American Council on Education Psychological Examination.

Attitudes of North Carolina College Students (Women) Toward the Negro. WILTON P. CHASE, Woman's College of the University of North Carolina, Greensboro, N. C.

Attitudes toward the Negro of 1027 women students from North Carolina in 3 North Carolina colleges were measured by Hinckley's Scale. Results show an increasing favorableness in attitude toward the Negro with decreasing percentage of Negroes in the total population, when analyzed on the basis of students' home counties. The attitude of these students is, on the average, more favorable than that of University of Alabama students from the South and less favorable than that of Ohio University students (data of Sims and Patrich). When the attitude of students from counties where 70% or more of the Negroes are farmers was compared with that of students from counties where less than 20% of the Negroes are farmers, no difference was found. Nor was there any difference between students from Piedmont and Coastal Plain counties. In both comparisons, counties with similar percentages of Negroes in the total population were used. Attitude toward the Negro of these college students seems to be associated with some, as yet unknown, factor attendant upon the percentage of Negroes in the total population.

Relative Influence of Commercial and Liberal Arts Curricula in Promoting Changes in Certain Attitudes. K. L. BARKLEY, Woman's College of the University of North Carolina, Greensboro, N. C.

During the first 6 weeks of the school year, 7 social attitude scales, edited by Thurstone, were given to representative groups of students from the 1-year commercial division and from the freshman class in a state-supported woman's college. The groups were retested in the spring with the same or with different forms of the scales. The changes in the median scores of the 2 groups were noted.

Since the commercial and regular students lived on the same campus, participated in common extracurricular activities, and were subject to similar community and developmental influences, there is some basis for concluding that differences in the degree of change in social attitude are due (in part) to the different influences of the 2 courses of study.

In some cases the changes were about equal in the 2 groups, notably in cases of attitudes toward evolution and law. In those cases where the freshman curriculum introduced material directly related to the attitude in question, the freshmen showed more marked changes, *e.g.* attitudes toward the Constitution and toward war.

The findings indicate that factors other than the curricula are of high significance in producing changes in attitudes.

The Relation of Personal History Data to College Success.

E. J. ASHER and FLORENCE E. GRAY, University of Kentucky, Lexington, Ky.

The object of this study was to see if personal history data have any relation to college success, and if so, to see whether such data, when combined with ability test scores, would materially increase the accuracy of prediction of college success. The subjects used in the study were 200 students of both sexes from the College of Arts and Sciences, University of Kentucky. Using the Adkins-Toops item validation technique, the personal history items found on the Kentucky Personal History Blank were validated against a quality-quantity-perseverance measure of college success. The items which were found to have a definite relation to this criterion were scored to obtain a "personal history score" for each student.

This score was then correlated with the quality-quantity-perseverance criterion and with the more common quality-quantity ratio measure of college success. The general ability test scores of these students were likewise correlated with both of these measures of success. Multiple correlations were obtained between each of these criteria of college success and the combined personal history and general ability test scores. The results indicate that the personal history score materially increases the accuracy of general ability test prognosis of either criterion of college success. The personal history score is more closely related to the quality-quantity-perseverance criterion, while the general ability test score is more closely related to the more common quality-quantity ratio criterion.

SECTION II

CHAIRMAN, ROBERT J. WHERRY

An Experimental Study of Musical Meanings. BRANTLEY WATSON,
Duke University, Durham, N. C.

The specific purpose of this investigation is twofold: (1) to determine with what consistency music can be classified according to various meanings at different age levels and (2) to devise an instrument whereby ability to discriminate between such meanings can be measured.

The general procedure followed in constructing the test of ability to discriminate between musical meanings was to devise a check-list of appropriate adjectives (abstract meanings) and to select musical recordings representative of each of the list items. Subjects could then indicate on the check-list the adjectives which best represented each selection as it was played. The test also required the subjects to rate each selection in terms of its musical attributes (pitch, volume, etc.).

In 2 preliminary tests the most suitable adjectives to be used were experimentally determined, and appropriate corresponding musical representations were objectively selected. In a third test the items selected were standardized on the basis of the judgments of expert musicians. It was thus possible to compare responses at different age levels with the expert criterion.

The data are analyzed from the standpoint of (1) general nature of musical meanings, (2) musical characteristics of different abstract meanings, (3) growth in ability to discriminate between musical meanings, and (4) general nature of the discriminative ability.

Oral Group Rational Learning Test. HENRY F. DICKENSON,
Lincoln Memorial University, Harrogate, Tenn.

This paper, accompanied by charts and diagrams, describes and illustrates a new apparatus for measuring orally the rational learning ability of groups. A brief historical account of related previous attempts is given. The administration of the test to some 300-odd subjects, the establishment of tentative norms, and development of the test in general is handled in the paper. Probable usefulness, problems, and conclusions are presented.

Bodily Movements Accompanying Problem-solving Activity. ALAN D. GRINSTED, Louisiana State University, University, La.

Bodily movement of subjects solving mental problems was recorded by use of a new type of stabilimeter chair. These records indicate that there is a definite increase of movement at the points where the subject is changing to a new attack on the problem. Similar bodily shifts following the solution of the final problem, however, suggest that this movement is due to a relaxation of muscles which have been gradually brought under tension, rather than due to the assuming of new postural sets with each new attack.

Reminiscence in the Learning of a Punch-Board Maze. MARGARET ROBINS, University of North Carolina, Chapel Hill, N. C.

The purpose of this experiment was to determine the presence or absence of reminiscence in the learning of a punch-board maze. This particular experimental setup was selected as one which would minimize opportunities of review—a factor often used to explain the appearance of reminiscence in more verbal learning situations. The maze used was a copy of that employed by Tolman, Hall, and Bretnall in their study of the law of effect. Sixty-two students from elementary psychology laboratories served as subjects. They were divided into 2 groups: a control group who took successive trials on the maze and an experimental group who were interrupted for a period of 24 hours between the fourth and fifth trials. Control and experimental subjects were compared in terms of group scores and in terms of scores of those subjects who improved on the fifth trial. The comparisons were made both with respect to scores on trial 5 and to total scores. There was no evidence of reminiscence. The various methods of measuring reminiscence were discussed in their application to results of this experiment.

Sex Differences in Rate of Reading. JOSEPH E. MOORE, George Peabody College for Teachers, Nashville, Tenn.

In this study 1215 boys and 1518 girls, representing each consecutive class from the eighth grade in junior high school through the senior year in college, inclusive, were studied for sex differences in rate of reading. The subjects, drawn from 2 junior and 2 senior high schools and 6 colleges, consisted of approximately 100 individuals of each sex at each grade level.

The test used was the Rate of Comprehension Section of the Unit Scales of Aptitude, which contains 56 paragraphs of relatively equal difficulty. The subject is required to cross out the word which denies the thought in each paragraph.

The data were treated statistically. The results seem to show that the girls are consistently more rapid readers than the boys from the eighth grade through the sophomore year in college, inclusive. Boys at the junior and senior college levels surpassed the girls, but the difference between the mean reading scores was not statistically reliable. Statistically reliable differences, however, were found to exist in favor of the girls in the comparison of the reading scores of the total group of each sex and in 4 of the 9 comparisons at the grade or class levels.

SPECIAL SECTION IN EXTRA-SENSORY PERCEPTION

CHAIRMAN, J. B. RHINE

A Further Advance in Methods of Investigating Extra-Sensory Perception. J. G. PRATT, Duke University, Durham, N. C.

This report presents the results of an investigation undertaken to meet criticisms that have already been made and to anticipate others which are conceivable. The research is the joint work of Mr. J. L. Woodruff and the writer.

The experimental procedure involved the following safeguards against sensory cues and errors: (1) Both experimenters were present during all the tests. (2) The subjects were tested for their ability to guess cards completely screened from sight and handled entirely by Experimenter X. (3) The subject indicated his guesses by pointing in relation to 5 key symbols which were out of X's sight and unknown to him until after he had recorded the 25 cards at the end of the run. (4) Meanwhile, Experimenter Y, without seeing X's cards, recorded the key cards. (5) The 2 separate records were deposited at once in a locked box to be scored later by a third person. The record sheets were serially numbered in pairs and assigned for the purpose of the investigation so that every run could be clearly accounted for. (6) The 2 experimenters jointly checked each score from the cards and each entered the count in his personal record book. (7) The score from the record sheets was later compared with those of the experimenters and in case of a discrepancy the lower score was adopted.

Thirty-two subjects, chiefly undergraduate women, have been tested (October, 1938, through February, 1939) under these conditions to the extent of 2400 runs (60,000 trials). The results obtained are regarded as "inexplicable" by the hypotheses available, unless by that of an extra-sensory mode of perception.

PROCEEDINGS OF THE FOURTEENTH ANNUAL
MEETING OF THE MIDWESTERN
PSYCHOLOGICAL ASSOCIATION

J. P. GUILFORD, SECRETARY-TREASURER, UNIVERSITY OF NEBRASKA

The Fourteenth Annual Meeting of the Midwestern Psychological Association was held at the University of Nebraska, Lincoln, Nebraska, on Friday and Saturday, May 5 and 6, 1939. The known attendance, as indicated by the number who signed the register, was 362. A special feature of the meeting was the celebration, with the department of psychology at the University of Nebraska, of the fiftieth anniversary of the founding of its psychological laboratory by Harry Kirke Wolfe in 1889. The commemorative address was given by Walter B. Pillsbury at the annual banquet on Friday evening, followed by a vigorous address by the President, Edmund S. Conklin, on "The Present Status of Academic Psychology." A special lecture, sponsored by Psi Chi, was presented Saturday afternoon by Karl Bühler on "The Orientation of Organisms in Time and Space."

At the annual business meeting, held on Friday afternoon, 54 new members were elected, bringing the present membership to 468. It was voted to contribute the sum of \$25.00 toward the support of the American Psychological Association Committee on Displaced Foreign Psychologists. The Treasurer's report showed an income of \$373.10 for the year ending May 1, 1939, and a total expenditure of \$382.58, leaving a cash balance of \$215.71. The Council announced the next place of meeting as the University of Chicago, the last week of April or the first week of May, 1940, the exact dates to be decided later. The following newly elected officers of the Association were announced:

President, 1939-1940: J. P. Guilford, University of Nebraska.

Secretary-Treasurer, 1939-1942: Robert H. Seashore, Northwestern University.

Council Member, 1939-1942: N. R. F. Maier, University of Michigan.

PROGRAM

FRIDAY MORNING, MAY 5

SESSION A. GENERAL

CHAIRMAN, EDMUND S. CONKLIN, INDIANA UNIVERSITY

An Analysis of the Content of Recent Textbooks in General Psychology. EARLE E. EMME, Morningside College, Sioux City, Ia.

Twelve most recent textbooks in general psychology are analyzed from the standpoint of their emphasis upon 5 areas of psychological data. Present needs and interests of students and use of experimental data and findings are increasing in emphasis.

Evidence for a Science of Recreational Guidance. T. F. LENTZ, Washington University, St. Louis, Mo.

A presentation of evidence for a science of recreational guidance in the form of data indicating easily detectible and objectively demonstrable correlation between recreational preferences and practices and other personality symptoms. This evidence appears to open the way for development of a scientific basis for recreational guidance.

The Interlinkage of Hereditary Elements (Ancestral Occupations) With Present Artistic Aptitude. NORMAN C. MEIER, State University of Iowa, Iowa City, Ia.

From considerable data a theory is derived that present artistic aptitude is almost invariably interlinked with constitutional stock inheritance (ancestries having as usual occupations craftsman activities). The theory is based on the doctrine of orthogenesis. Other traits are involved and, taken together, are predictive of artistic competence.

Morgan's Canon and the Problem of the Nervous System. R. H. WATERS, University of Arkansas, Fayetteville, Ark.

The influence of Morgan's canon in the human field has culminated in an anthropomorphism of the nervous system of a more serious nature than the original sin of Romanes and his followers. Studies of the nervous system are of psychological importance only as they clarify the conditions of human behavior.

The Mental Fatiguability of Malnourished and of Mentally Defective Children. ARTHUR G. BILLS, University of Cincinnati, Cincinnati, O.

The first study, made with A. McGilliard, established that the greater than normal muscular and mental fatiguability of 15 malnourished children disappeared with recovery from malnourishment. The second, with H. Valentiner, demonstrated much greater fatiguability of 26 mentally deficient children, from continuous mental work, than of normal controls of equivalent age.

An Outline for the Synthesis of Viewpoints in Psychology. ROBERT H. SEASHORE and BENJAMIN BURACK, Northwestern University, Evanston, Ill.

A basic outline for analyzing schools of psychology also shows the systematic interrelations of the special fields of psychology. Contributions of schools represent, primarily, differences in interests, emphases, and approaches which are *supplementary* rather than opposing.

The Marriage Course as a Psychology Department Offering. LAIRD T. HITES, Central Y. M. C. A. College, Chicago, Ill.

Marriage is a personal relationship, psychological in nature. Success depends on mutual personality adjustments. Legal, biological, or sociological considerations, while important, are secondary. The course should discuss selection of a mate, courtship, marital adjustments, children, resolution of conflicts, and broken homes, in terms of personality relationships.

1. SYMPOSIUM ON LABORATORY REPORTS

CHAIRMAN, HULSEY CASON, UNIVERSITY OF WISCONSIN

SESSION B. CONDITIONED RESPONSE

CHAIRMAN, ELMER CULLER, UNIVERSITY OF ROCHESTER

Changes in General Behavior During the Conditioning of Dogs. IRVIN S. WOLF, Indiana University, Bloomington, Ind.

Records of the lifts of *all 4 feet* and of respiration were taken during the buzz-shock conditioning of the right hind foot. Amplitude, latency, and frequency figures show evidence of trial and error, hypotheses, and other learning phenomena.

The Pupillary Response Conditioned to Subliminal Auditory Stimuli: A Control Experiment. CHARLES ALFRED METZNER and LYNN E. BAKER, University of Wisconsin, Madison, Wis.

The pupillary response was conditioned to subliminal auditory stimuli. Differences in latency between the unconditioned and conditioned responses were obtained.

Bilateral Conditioning as an Indication of Side Preference. E. G. BRUNDAGE and W. N. KELLOGG, Indiana University, Bloomington, Ind.

Dogs were conditioned to lift *both hind feet simultaneously* to a buzz stimulus. Their weight was supported by a strap. Differences in amplitude, latency, and frequency in the CR's from the 2 body sides were demonstrated.

Pseudo-conditioned Responses in the Cat. H. F. HARLOW, University of Wisconsin, Madison, Wis.

Pseudo-conditioned responses (responses to a buzzer never before simultaneously presented with shock stimuli) were obtained in 11 out of 15 cats. The pseudo-conditioned responses were not specific to the test situation, were much weaker than the unconditioned responses, and were retained for a maximum period of 96 hours.

Factors in Human Salivary Conditioning. LOUISE FENGER JONES, University of Wisconsin, Madison, Wis.

Human salivary conditioning was investigated using Razran's absorbent cotton technique. The results show that the conditioned response training situation is more complex than has often been assumed and that a systematic variation of the external stimulating conditions may make possible some analysis of this complexity.

The Influence of Attitude on the Conditioned Eyelid Response. DAVID A. GRANT, University of Wisconsin, Madison, Wis.

Analysis of eyelid responses conditioned to a light stimulus showed that a group of subjects maintaining an attentive-expectant attitude toward the light was more rapidly conditioned than a passive group. Each of 16 subjects showed several distinct eyelid response patterns. Verbal reports indicated mounting expectation during each conditioning trial.

2. SYMPOSIUM ON CLINICAL PSYCHOLOGY

CHAIRMAN, GEORGE A. KELLY, FORT HAYS KANSAS STATE COLLEGE

3. SYMPOSIUM ON PERSONALITY

CHAIRMAN, H. H. REMMERS, PURDUE UNIVERSITY

FRIDAY AFTERNOON, MAY 5

SESSION A. ATTITUDES AND FEELINGS

CHAIRMAN, R. H. WATERS, UNIVERSITY OF ARKANSAS

Oral and Written Wishes of Rural and City School Children.

GEORGE S. SPEER, Children's Service League, Springfield, Ill.

Seventy-six rural school children and 115 city school children were asked to write the 3 things they most wished would come true. Later, in a private interview, they were orally asked what they wished most. Wishes are classified by sex, age, rural and city school, oral and written, and variations noted.

The Relationship Between Certainty of Opinion and Amount of Self-estimated Information.

STUART W. COOK, University of Minnesota, Minneapolis, Minn.; and EVELYN RASKIN, Randolph-Macon Woman's College, Lynchburg, Va.

The purpose of this investigation was to determine whether individuals who have definite opinions on controversial issues also believe themselves to possess crucial information about these same issues. The results show a definite correspondence between degree of certainty of opinion and amount of information an individual estimates himself to have.

Where Do We Get Our Attitudes? A. R. GILLILAND, Northwestern University, Evanston, Ill.

In order to discover how nearly attitudes of high school and college students are like those of their parents, 2 attitude scales, God and depression scales, were given to students and parents. Correlations ranged from .10 to .30, showing that home is only one, and a rather small, factor in formation of students' attitudes.

Some Factors Affecting the Change of Attitudes of College Freshmen. IRIS STEVENSON, Fort Hays Kansas State College, Hays, Kan.

Each of 3 elementary psychology classes was given 10 different proposed social actions, and the subjects were asked to rate their attitudes on a 7-point scale. Crystallization consisted of discussion

of each proposition, and at the end of the week they were again tested to discover the change in attitude.

The Electrodermal Response to Advertising Copy. CHRISTIAN A. RUCKMICK, Minneapolis, Minn.

Responses of the sweat glands were recorded during a 3-second exposure of advertising copy. Several series of copy, run with 20 subjects, revealed an internal consistency of data and also gave results which tallied in a general way with choices obtained by the serial procedure of impression.

Time Required for 'Real' and for Hypothetical Choices. ROGER G. BARKER, University of Illinois, Urbana, Ill.

A study of preferences for edible liquids showed that choice times are shorter when the chosen liquid must be consumed than when the choice is hypothetical, are inversely related to the 'distance' between the liquids in the preference series, and are longer for undesired than for desired pairs of liquids.

Speed as a Determiner of Musical Mood. MELVIN G. RIGG, Oklahoma A. and M. College, Stillwater, Okla.

Five musical phrases were played, each at 6 different speeds, to 88 observers. The data indicate that the faster a phrase is played, the more joyful, or the less sorrowful, it tends to become.

1. SYMPOSIUM ON MENTAL HYGIENE

CHAIRMAN, H. MELTZER, PSYCHOLOGICAL SERVICE CENTER,
ST. LOUIS

SESSION B. MENTAL DEVELOPMENT

CHAIRMAN, M. L. REYMERT, CHILD RESEARCH INSTITUTE,
MOOSEHEART

Three Types of Fetal Activity. HELEN NEWBERY, Fels Research Institute, Yellow Springs, O.

Weekly 3-hour observations by pregnant mothers concerning fetal activity were recorded by polygraph. The mothers discriminated slow, quick, and rhythmic movements. Age tendencies and individual differences in activity are illustrated and certain influencing factors of maternal state discussed.

Electrical Accompaniments of Sleep Stages in the Neonate.

LAWRENCE N. MARX, Ohio State University, Columbus, O.; and
ISABELLE F. WAGNER, Princeton Radio Research Project,
Princeton, N. J.

A parallel was found between previously established overt criteria of sleep depth and the gross electrical potential of 25 newborn infants. Electrical records were taken from a high gain amplifier recording continuously with a cathode-ray oscillograph. No significant age or sex differences were obtained.

The Effect of Enriched Educational Experiences Upon the Growth of Intelligence of Very Superior Children. BOYD ROWDEN
McCANDLESS, State University of Iowa, Iowa City, Ia.

Six very superior 4-year-olds (IQ-range, 125-165; mean, 139), given an enriched program, stood higher in IQ 6 months and 1 year after testing than originally almost exactly matched controls experiencing only preschool. Constructiveness of behavior and emotional stability seemed highly related to intelligence gain.

Domination and Social Integration in the Behavior of Kindergarten Children in an Experimental Play Situation. HAROLD H.
ANDERSON, University of Illinois, Urbana, Ill.

This study of 49 kindergarten children in 3 groups followed experimental procedures developed for use in previous studies of children of preschool age. While showing certain departures from findings with preschool children, data offer only consistent evidence supporting 15 hypotheses and assumptions advanced in earlier studies.

The Comparative Rigidity of Different Chronological Age Groups With Equal Mental Ages. JACOB S. KOUNIN, State University
of Iowa, Iowa City, Ia.

This study is an experimental analysis of Lewin's concept of rigidity as it applies to theories of age and of feeble-mindedness. A hypotheticodeductive method was utilized, and experiments were designed to test 5 theorems. Three groups of subjects of equal mental ages but different chronological ages were studied.

Some Measurable Aspects of the Child's Home Environment.
HORACE CHAMPNEY, Fels Research Institute, Yellow Springs, O.

Thirty variables of parent behavior toward the child were presented as graphic rating scales, adequately refined for skilled

observers. Data show the variables to be measurable, relatively independent of age, and discriminative of characteristics of the parent environment thought to be important for personality development.

Significance of Month of Birth as Judged by Test Scores and Grades.

E. L. CLARK, Northwestern University, Evanston, Ill.

High school rank, scholastic aptitude test scores, first-semester grades, and graduation from college were taken as indices of ability for over 3000 students. By an analysis of variance of many subgroups and intercorrelations between samples of 100, practically no evidence was found to favor one month above another.

2. SYMPOSIUM ON MOTIVATION

CHAIRMAN, PAUL THOMAS YOUNG, UNIVERSITY OF ILLINOIS

SESSION C. PERSONALITY

CHAIRMAN, ARTHUR G. BILLS, UNIVERSITY OF CINCINNATI

An Evaluation of Beck's Norms as Applied to Young Children.

HARRIETT DUNMIRE, Wichita Child Guidance Center, Wichita, Kan.

In accordance with Beck's suggestion, an effort was made to find norms from 119 children between the ages of 5 and 11. FC, FY, Z, and P scores were lower. F+%, A%, M, S, CF, C, and R were fairly comparable. P failure decreased with increasing chronological age.

The Agreement Between Associates' Ratings and Self-Ratings of Personality. ELEROY L. STROMBERG, Oklahoma A. and M. College, Stillwater, Okla.

Reducing the self-ratings and associate-ratings of personality traits of college girls to the proportion of desirable responses out of the number of items attempted causes differences between such ratings to disappear. The results indicate that overestimation in the self-ratings of college women is not a common characteristic.

Baxter Group Test of Child Personality. EDNA DOROTHY BAXTER, Englewood Public Schools, Englewood, Col.

The Baxter Group Test of Child Personality is standardized for grades 1 to 8, inclusive. About 1200 tests were used in standardi-

zation, obtained from various parts of the country. Reliability, through the split-halves method, was .918. Validity, established through correlation with Individual Personality Tests, was .71. Grade norms were established.

The Home Adjustment Inventory: An Attitude Scale for Personnel Procedures. LYLE K. HENRY, Iowa State College, Ames, Ia.; and EARLE E. EMME, Morningside College, Sioux City, Ia.

The Home Adjustment Inventory measures the degree of affection of students for parents. The inventory was validated by item selection, by case studies, and by correlation with other inventories. Findings: Students have more affection for mother; women have more affection for parents; students who dislike parents are most frequently maladjusted.

Waking Suggestibility in Children—General or Specific? H. H. REMMERS, Purdue University, Lafayette, Ind.

An experiment with 118 children is reported, designed to determine the psychological concomitance of 2 tests of waking suggestibility used earlier by Aveling and Hargreaves, and further designed to determine the reliability of the tests according to a more defensible operational criterion than they used.

Psychoanalytic 'Catharsis' in a CR Situation. LYNN E. BAKER and CHARLES ALFRED METZNER, University of Wisconsin, Madison, Wis.

A psg response was conditioned to a nonconscious stimulus. In psychoanalytic terminology, we produced a system of ideas having emotional tone (complex), important parts of which (buzzer, psg "symptom") were in the unconscious. The experimental results indicate that the CR connection is changed by "catharsis" in this situation.

Home Setting as a Factor in the Problem of the Only vs. the Non-only Child. LELAND H. STOTT, University of Nebraska, Lincoln, Neb.

In the farm and town home situations "onliness" was not an important factor in personality adjustment. Slight differences in the former favored the *non-onlies* while in the latter they favored the

onlies. The city *non-onlies* were significantly superior in "rationality," but the *onlies* definitely excelled in "adjustment," "independence," and "responsibility."

FRIDAY EVENING, MAY 5

ANNUAL DINNER

TOASTMASTER, ARTHUR G. BILLS, UNIVERSITY OF CINCINNATI

Address of Welcome: DEAN J. E. LEROSIGNOL, University of Nebraska.

Anniversary Address: WALTER B. PILLSBURY, University of Michigan.

Subject: "The Nebraska Psychological Laboratory"

Presidential Address: EDMUND S. CONKLIN, Indiana University.

Subject: "The Status of Academic Psychology"

SATURDAY MORNING, MAY 6

SESSION A. SENSORY AND NERVOUS PHENOMENA

CHAIRMAN, C. A. RUCKMICK, MINNEAPOLIS, MINN.

Some Relationships Between Electrical Signs of Cortical and Peripheral Activity. JOHN M. HADLEY, State University of Iowa, Iowa City, Ia.

The electroencephalogram (motor and occipital), the electromyogram (*flexor digitarum communalis*), and the electrocardiogram were simultaneously recorded from 20 adult subjects and the data analyzed to ascertain whether there were relationships between these measures as regards (1) individual differences and (2) moment-to-moment variations. The relations appear significant from the standpoint of individual differences.

The Relationship Between Brain Potentials and Personality.

CHARLES E. HENRY, State University of Iowa, Iowa City, Ia.

Using 80 subjects, the per cent time alpha of the electroencephalogram and the "personality" rating of each individual were compared. The data indicate that *both* the dominant and rare alpha individuals

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Using 80 subjects, the per cent time alpha of the electroencephalogram and the "personality" rating of each individual were compared. The data indicate that *both* the dominant and rare alpha individuals

tended to be accompanied by an extroverted personality. A slightly higher per cent time alpha was found for the introverted group.

The Effect of Insulin on the Nervous System. S. HOWARD BARTLEY, Washington University Medical School, St. Louis, Mo.

The essential changes in nervous activity under insulin were studied by examining the discharge in certain nerves *in vivo*, the spontaneous activity of the cerebral cortex, its response to retinal stimulation and to stimulation of the saphenous nerve. The conclusions outline the effects and compare them with those of strychnine.

An Analysis of Perceptible Series of Partial in a Vocal Sound.

WILLIAM H. LICHT, State University of Iowa, Iowa City, Ia.

The investigation concerned a short vocal sound, of constant pitch and loudness, during which partials 3 to 7, inclusive, became successively prominent perceptually. Analytical data showed that the way the sound was heard was determined by attentional factors (due to changes of partials in intensity), although masking was not negligible.

Sensory Discrimination for Alternating Current Stimuli. LOUIS D. GOODFELLOW, Northwestern University, Evanston, Ill.

A study of electrical stimulation of the skin (a part of the general research program attempting to extend the usefulness of the lower senses for the deaf and blind) reveals good differential sensitivity for both frequency and intensity. Utilizing it introduces other complications.

Determiners of Adaptation Time. JOHN P. NAFE, Washington University, St. Louis, Mo.

Variations in adaptation time are a function of the weight and area of the stimulus and of the amount and rate of the displacement of tissue.

Sensory Adaptation. K. S. WAGONER, Washington University, St. Louis, Mo.

Movement induced in tissue by the application of a weight is negatively accelerated as adaptation occurs, and the curves for the 2 phenomena are identical. These facts are interpreted to mean that sensory adaptation is not a fatigue phenomenon and is not due to any effect upon the end-organ or nerve, but is due to a failure of stimulation.

1. SYMPOSIUM ON CONSTANCY OF THE IQ

CHAIRMAN, BETH L. WELLMAN, STATE UNIVERSITY OF IOWA

SESSION B. APPLIED PSYCHOLOGY

CHAIRMAN, J. P. PORTER, OHIO UNIVERSITY

Differences Among Groups of Former Students at the University of Louisville. LAURENCE WHISLER, University of Louisville, Louisville, Ky.

'Active students,' 'graduates,' 'transfers out,' 'failed and dismissed,' 'probation and warning' withdrawals, and 'miscellaneous' withdrawals were compared on college entrance test scores, on range and average grades in high school and college, sex, fraternity, etc. Group differences in items taken singly and in combination were studied.

A Study of the Unit Cost of Obtaining Attitudes. JOHN W. HANCOCK, Purdue University, Lafayette, Ind.

In a study exploring the unit cost of obtaining attitudes toward the retail store, using 4 methods, it was found that the method of including 25 cents with the attitude instrument cost less on the whole and agreed with the other methods on the attitudes measured.

Evaluation of Factors Involved in Driver Training. A. R. LAUER and A. F. SILKETT, Iowa State College, Ames, Ia.

One hundred and twenty individuals, ranging in age from 11 to 65, were given both textbook and practical training in automobile driving. The findings suggest that an adequate knowledge of the car, the highway, and traffic regulations, as well as of proper driving habits, will greatly facilitate mastery of automobile driving.

The Diagnosis and Treatment of Orthoptic Difficulties in Relation to Reading. JANE HUTCHINSON, State University of Iowa, Iowa City, Ia.

This study shows how the Betts Visual Perception Tests and Gray Oral Reading Check Tests can be used as diagnostic measures in discovering orthoptic difficulties. The relationship of these difficulties to reading deficiencies is pointed out and 8 case studies made showing the effect of eye-muscle training on reading.

Legibility of Newsprint. MILES A. TINKER and DONALD G. PATERSON, University of Minnesota, Minneapolis, Minn.

In 6 studies of newsprint legibility (2956 subjects) line width, type size, leading, and type faces were investigated. Variation of type size and leading affected legibility least; type face affected it most. Results coincide only partly with current usage, but well with reader preference.

Reliability of Memory and Testimony for Visual Presentation.

WILLIAM E. KENDALL, Northwestern University, Evanston, Ill.

A standardized test for memory of details (lantern slide) is analyzed for effects of familiarity, suggestion, confidence, and methods of report. Norms for college students are provided.

Ocular Photography: A Study of Ocular Patterns to Discover Characteristic Eye-Movements and Their Psychological Implications. H. F. BRANDT, Drake University, Des Moines, Ia.

A symmetrical figure was designed to determine the right-left, top-bottom, and horizontal-vertical preference of eye-movements. Ocular patterns reveal a left, top, and horizontal preference with critical ratios statistically significant. Ocular patterns of students with high or low achievements are strikingly different.

2. SYMPOSIUM ON CONTEMPORARY SOCIAL PROBLEMS

CHAIRMAN, A. R. GILLILAND, NORTHWESTERN UNIVERSITY

SESSION C. LEARNING

CHAIRMAN, ARTHUR W. MELTON, UNIVERSITY OF MISSOURI

A Second Study of the Relative Effect of a Cerebral Lesion on Learning, Transfer, and Retention. STANFORD C. ERICKSEN, University of Arkansas, Fayetteville, Ark.

The retarding effect of a cerebral lesion, approximately constant in locus and size, was found to vary directly with the difficulty of the task and inversely with the learning ability of the animals. An error analysis indicates some of the mechanisms producing differences in learning by normal and operated rats.

An Experimental Study of Oddity-Abstraction in the Monkey.

JOHN A. BROMER, University of Wisconsin, Madison, Wis.

The problem of oddity-abstraction was investigated in a group of New- and Old-World Monkeys. Evidence obtained and checked by controls indicated that a constant factor making possible oddity-generalization was influential in determining the animals' responses.

Tool-Using in the Rhesus Monkey. PAUL H. SETTLAGE, University of Chicago, Chicago, Ill.

Three rhesus monkeys exhibited varying degrees of skill in the use of objects to obtain food situated beyond arm's reach. One showed almost spontaneous learning, and acquired the ability to retrieve tools and use various substitutes. The performances of the others showed rudimentary ability and meager insight.

Correlations Between Different Forms of Learning. HULSEY CASON, University of Wisconsin, Madison, Wis.

A survey has been made of several thousand raw correlations between different forms of learning and between learning and other test scores. The low correlations indicate much specificity in different forms of learning and in different cognitive functions.

Some Implications for Pupil Learning of Teachers' Classroom Questions. STEPHEN M. COREY and G. L. FAHEY, University of Wisconsin, Madison, Wis.

Verbatim records of some 30,000 questions, asked pupils by 6 high school teachers of English, history, and science, were analyzed to determine their bearing upon pupil learning activity. The relationships between type of question asked and various pupil and teacher characteristics were presented.

Interrelations of Vocabulary Skills: Commonest vs. Multiple Meanings. GEORGE D. LOVELL, Northwestern University, Evanston, Ill.

Previous vocabulary tests of *extensive* knowledge (measuring number of words for which a single commonest meaning is known) are here correlated with a new test of *intensive* knowledge (measuring number of different meanings known for the same list of words).

SATURDAY NOON, MAY 6

PSI CHI LUNCHEON

SATURDAY AFTERNOON, MAY 6

SESSION A. MENTAL TESTS

CHAIRMAN, MILES A. TINKER, UNIVERSITY OF MINNESOTA

A Laterality Experiment. W. H. MIKESELL and MARTIN PALMER, University of Wichita, Wichita, Kan.

Considering that there has been too much subjective judgment in the star-tracing experiment, the present problem aims to correct this difficulty by objectively recording error-time by an electric impulse counter and objectively recording electrically the orientation of error—that is, where, the number, and in what directions they occur.

Retest Results on the A. C. E. Psychological Examination. WILLIAM A. THOMSON, Carleton College, Northfield, Minn.

Retest results for the A. C. E. Psychological Examination gave a significant difference in the gross score mean and a very wide range of individual changes in gross scores. No significant difference was found when the 2 sets of scores were correlated with college grades. Individual raw score changes correlated very slightly with low scores.

A Study of the Influence of the Experiential Factor on Intelligence Test Scores. E. V. BOWERS, Marshall College, Huntington, W. Va.

A study of freshman psychological examinations showed that students with previous experience in taking objective tests made higher scores than those with no experience. It is suggested that further study may indicate a need for either a differential or a practice test prior to the regular psychological examination.

Test-Retest Reliabilities of Mental Ability, School Achievement, and Personality Traits. EDWARD E. CURTIS, HOWARD B. FULLER, and J. P. PORTER, Ohio University, Athens, O.

The Otis Classification, Bernreuter Personality, Pressey Interest-Attitude, and O. C. A. Rating Scale were used. Confirmatory r 's were found for ability and achievement for a 5-month and for 3- to 4-year intervals. Surprisingly high r 's, mean of .66, were found for personality traits for the shorter interval. The subjects were 130 ninth-grade students.

An Experimental Analysis of Speed and Level in Intelligence Testing. BRENT BAXTER, University of Minnesota, Minneapolis, Minn.

Relationships of speed, level, and power as measured by the Otis Self-Administering Test and as validated by 3 criteria of intelligence (honor-point ratio, Army Alpha, a College Aptitude Test) were studied. Group and individual testing results are compared.

An Objectified Practical Test for Clinical Psychologists. GRACE MUNSON, MILTON A. SAFFIR, and HELEN U. CHAMNESS, Bureau of Child Study, Chicago, Ill.

A half-day practical examination for clinical psychologists, in 11 parts, has been devised for the purpose of (1) testing actual techniques, (2) sampling clinical skills extensively, (3) including objectified evaluations of personal qualities, (4) conserving examination time, (5) equalizing difficulty for all subjects, (6) objectifying administration of examination, and (7) simplifying and objectifying scoring.

1. SYMPOSIUM ON FACTOR ANALYSIS

CHAIRMAN, H. A. BECHTOLDT, UNIVERSITY OF CHICAGO

SESSION B. SOCIAL AND POLITICAL ATTITUDES

CHAIRMAN, RAYMOND H. WHEELER, UNIVERSITY OF KANSAS

A Factor Analysis of a Questionnaire on Political Attitudes of Czechoslovak Students. EDMUND E. DUDEK, University of Nebraska, Lincoln, Neb.

A factor analysis of 300 students' scores (based on scale values) resulting from a questionnaire survey of Czechoslovak student political attitudes revealed 4 factors: Democratic, Nationalistic, Anarchistic, and Tolerance. A second analysis based upon tetrachoric r 's between selected items in the same questionnaire failed to show the same factors.

The Responses of 'Communists' and 'Non-Communists' to Concepts of State Forms. ALLEN L. EDWARDS, Northwestern University, Evanston, Ill.

The extent of uniformity (standardization) of responses to the terms, Democracy, Fascism, and Communism, was investigated. The findings seem to support the hypothesis that *definiteness* of

stereotypes is related to degree of prejudice, but not to a factor of familiarity. The stereotype content for groups holding opposing attitudes, however, may differ markedly.

Children's Thinking About Nations and Races. H. MELTZER, Psychological Service Center, St. Louis, Mo.

The reactions of 1000 children, examined in 1934, and 382, examined in 1938, were studied for the purpose of gaining insights on the nature and development of nationality concepts and stereotypes in American children toward each and all of 21 nations.

The Relative Effectiveness of Cartoons and Editorials as Propaganda Media. ALBERT D. ANNIS, State University of Iowa, Iowa City, Ia.

The relative effectiveness of the cartoon and editorial in the modification of attitudes was studied experimentally, using militaristic and pacifistic cartoons and editorials equated as to subject matter, bias, and persuasiveness. The editorials were most effective with 382 college subjects and the cartoons with 183 high school subjects.

Shifts in Attitude Caused by Cartoon Caricatures. R. ASHER and S. S. SARGENT, Central Y. M. C. A. College, Chicago, Ill.

Subjects recorded their favorable or unfavorable attitudes toward a number of terms, such as 'Uncle Sam,' 'Labor,' and 'New Deal,' then reacted to cartoon caricatures of the same subject matter. Significant shifts in attitude generally occurred with strongly complimentary or uncomplimentary cartoons of subjects about which group opinion was neutral or divided.

2. SYMPOSIUM ON LEARNING

CHAIRMAN, DAEL L. WOLFLE, UNIVERSITY OF CHICAGO

3. SYMPOSIUM ON PRINCIPLES OF DEVELOPMENT

CHAIRMAN, HELEN L. KOCH, UNIVERSITY OF CHICAGO

Address: KARL BÜHLER, College of St. Scholastica, formerly of the University of Vienna.

Subject: "The Orientation of Organisms in Time and Space"

(Sponsored by the University of Nebraska Chapter of Psi Chi, National Honorary Society in Psychology.)

PROCEEDINGS OF THE WESTERN PSYCHOLOGICAL
ASSOCIATION, STANFORD UNIVERSITY,
CALIFORNIA, JUNE 23-24, 1939

FRANK C. DAVIS, SECRETARY, UNIVERSITY OF CALIFORNIA
AT LOS ANGELES

The 1939 meeting of the Western Psychological Association took place at Stanford University on June 23 and 24 with approximately 150 persons in attendance. Following the annual banquet, held in the Stanford Union on the evening of June 23, President Knight Dunlap addressed those assembled on the topic, "The Historical Method in Psychology." The concluding session of the meeting, held on Saturday afternoon, June 24, was devoted to a symposium on the topic, "Contributions of Psychology to the Understanding of Social Issues." Ernest R. Hilgard was local chairman in charge of arrangements for the meeting.

Officers elected for the ensuing year, 1939-1940, were:

President: Howard R. Taylor, University of Oregon.

Vice-President: Frank C. Davis, University of California at Los Angeles.

Secretary-Treasurer: Ralph H. Gundlach, University of Washington.

The Association will meet in June, 1940, at the University of California at Los Angeles, Los Angeles, California.

PROGRAM

Age and Intelligence of Juvenile Delinquents. CECIL W. MANN,
Claremont Colleges.

A group of 1731 juvenile delinquents, boys and girls, was measured on the New Revision of the Stanford-Binet Scale. The mean age of the group was found to be 14.47 years; the mean IQ, 84.45. No sex differences were found with respect to (a) mean age, (b) variability of age, (c) percentages in the various age groups,

(d) mean IQ (measured on Form L), (e) variability of IQ (measured on Form L), and (f) percentages in the various IQ levels.

Of the total group, 428 recidivists originally tested on the Stanford-Binet (1916 Revision) were retested at intervals of from 1 to 10 years on the New Revision (1937). Between the 2 measures there was a coefficient of correlation of .80. A group of 62 delinquents, tested and retested on Form L, yielded an r of .91.

An analysis of the variations of IQ over the retest period indicated that, of the 428 cases retested, changes in IQ of less than 3 points were recorded in 21% of the cases, while less than 7% had varied by more than 17 points.

Factors Correlated With Later Success or Failure of Intellectually Gifted Boys. LEWIS M. TERMAN and MELITA ODEN, Stanford University.

The report is based on a follow-up study of about 600 boys belonging to the California gifted group who earned Binet IQ's of 140 or higher in 1922. Degree of success of each was rated by 3 judges, who examined the records of accomplishment and classified the subjects into 3 groups: the 25% most successful, the 25% least successful, and the 50% falling between these extremes. The upper and lower quartiles were then compared on some 200 variables selected from the detailed ratings, test scores, and case-history data secured in 1922, 1928, and later. Some light is thus thrown on the factors that make for success or failure among subjects of fairly comparable intellectual endowment.

Control Experiments in Hypnosis and Their Relation to Certain Theories of Hypnosis. R. M. DORCUS, A. K. BRINTNALL, and H. W. CASE, University of California at Los Angeles.

The Relation Between Belief and Errors in ESP Recording. HOWARD F. UPHOFF, Stanford University. (Introduced by John L. Kennedy.)

Two comparable forms of an attitude scale to measure belief in telepathy were constructed using the Likert method. The scale yielded a reliability of .92 for the single forms and a reliability of .96 for the 2 forms when combined. When the scale was given to 2 groups, one known to be composed of believers, the other of disbelievers, no overlaps of scores were obtained.

This scale was used to select subjects (14 believers and 14 disbelievers) for a pseudotelepathic experiment in an attempt to measure

the relation between belief and error commitment in recording 11,125 calls by usual ESP methods. Both groups made about an equal number of errors which had no effect upon the score; the believers tended to make errors that increased the score; the disbelievers tended to make errors that decreased the score.

Some Results From the Use of Special Tests for Automobile Drivers in the State of California. E. D. FLETCHER, Department of Motor Vehicles; and C. W. BROWN, University of California.

Special driving tests may be evaluated in terms of their capacity to differentiate good and poor drivers and in terms of the effect that their administration has on stimulating drivers to use their abilities to a greater advantage. The results obtained from administering a battery of special driving tests to many different groups of drivers in California indicate that some of the tests have high differentiating capacity. The use of the tests also has had a marked effect in reducing accidents in several of the groups.

Resemblance of Twins in Speed of Association. HAROLD D. CARTER, Institute of Child Welfare, University of California.

A free-association test was administered to 138 children ranging in age from 9 to 17 years. In the group were 36 pairs of identical and 33 pairs of fraternal twins.

Individual differences in speed of response were very reliably measured, as indicated by a reliability coefficient of .95. Coefficients of resemblance averaged .53 for identical twins, .44 for fraternal twins, and .00 for unrelated matched pairs. Treatment of different portions of the data showed that the greater resemblance of identical twins is slight but very consistent.

The results agree with other evidence concerning twin resemblances in personality traits. As compared with data on physique and intelligence, data on personality traits seem frequently to show lower coefficients of twin resemblance and a lesser difference between coefficients of resemblance for identical and for fraternal twins.

A Study of Commercial Automobile Drivers. A. K. BRINTNALL, University of California at Los Angeles. (Introduced by Knight Dunlap.)

The Imagery of Oriental Children. JOSEPH MORSH, University of British Columbia.

Overnight Changes in Pursuit Learning With 2 Distributions of Practice. M. BREWSTER SMITH, Stanford University. (Introduced by E. R. Hilgard.)

Two groups of 22 undergraduates practiced the Koerth pursuit rotor on 4 consecutive daily sessions, each lasting 25 minutes. One group had 13 one-minute trials each day, separated by 1-minute rest periods, while the other had 8 one-minute trials separated by 3-minute rest periods, except for the first and last periods, which were 1 minute long.

Though the initial scores of the 2 groups were equal, the "spaced" group was markedly superior to the "massed" when comparison is based on mean scores after equal numbers of trials. This difference persisted throughout the trials on which comparisons were possible. The 2 groups were essentially equal throughout the 4 days in terms of mean scores after equal lengths of time from start of practice, although the "massed" group had practiced nearly twice as much. This appears to support the "stimulation-maturation" hypothesis. Overnight losses, which tended to increase from day to day, were minor and did not disturb the above relationships.

The Difference Limen for Tonal Duration. FRANKLIN HENRY, University of California.

The limens were determined by a modification of the constant method employing balanced series. Preliminary training reduced practice effects. The tones were produced electrically, the circuit being arranged to give a gradual build-up and termination of each sound in order to minimize transients. A motor-driven duration and increment controller was used.

The Weber ratio for a 50-db., 500-cycle tone was constant at 0.2 for durations of 47 to 277 milliseconds, but increased to nearly 0.3 at 32 milliseconds (average of 7 subjects). It was substantially unaltered by changing intensity from 30 to 90 db. above threshold, but increased at 20 db., particularly at the shortest duration. Changing frequency from 500 to 2000 cycles did not alter the Weber ratio, but it was increased approximately one-third at 250 cycles, a point of considerable theoretical interest.

The Relationship Between Basal Physiological Functions and Intelligence in Adolescents. NATHAN W. SHOCK and HAROLD E. JONES, University of California.

A group of 43 girls and 44 boys from Oakland, California, was studied. Determinations of oxygen consumption, pulse rate, blood

pressure, vital capacity, and respiratory volume were made under basal conditions on each of 2 successive mornings. In order to minimize the effects of training on the results of the physiological tests, observations collected in the Spring of 1935, when the children had a mean age of 14 years, were used for this study. This represented the seventh testing of these cases. The intelligence test used was the Terman Group Test. Forms A and B were administered at approximately 2-week intervals. Product moment correlation coefficients between mental test scores and the physiological variables were computed for males and females separately. The highest correlation obtained was $+ .27$ between Terman Group Test scores and basal metabolism, expressed in calories per square meter per hour. None of the correlations were statistically significant.

One-Trial Learning in Rats. BRADFORD B. HUDSON, University of California. (Introduced by C. W. Brown and Warner Brown.)

Fourteen rats, 24 hours hungry, were shocked once on the mouth by a condenser discharge as they ate from a metallic food holder attached to the center of a black and white striped cardboard pattern. They were tested without reinforcement at approximately monthly intervals for fear of this baited design.

On the first test trial, 1 month after the original experience, 13 gave marked negative responses. From this point on, the death rate was high among the animals due to old age, but at 6 months, 5 of the 7 still living showed definite avoidance responses. At 8 months, 2 of the 4 still living were "cautious" in their approaches to the bait, and 2 showed no fear.

One of the several sensitive indexes of a disturbed condition in the rat is provided by his sawdust-pushing behavior. His reaction on the first test trial is to cover, sometimes completely, the 3-inch-high design. The amount of sawdust pushed diminishes with each subsequent test trial.

A Method of Studying Olfactory Discrimination in the White Rat.

ROBERT L. FRENCH, Stanford University. (Introduced by C. P. Stone.)

Small groups of animals were trained, in a specially designed multiple choice apparatus, to reach with their forepaws for unadulterated food in preference to food to which had been added quinine sulphate and 1 of 10 different odorous substances. Operative and environmental controls were introduced to rule out position, taste,

visual and extraneous olfactory cues. The results demonstrate the dependence of the habit upon olfaction, great rapidity of learning, and the sensitivity of the rat to all of the odors used; and they suggest that olfaction is better developed in the rat and more important for its behavior than the results of earlier and more artificial techniques have implied.

Hesitation Time and Correctness of Choice in Rats. C. W. CRANNELL, University of California. (Introduced by E. C. Tolman.)

In a first experiment a simple elevated maze was used, and 12 rats were required on their second run to take the path in the opposite direction to the path taken on their first run. Mean hesitation time at the choice point over a period of 20 days was 9.5 seconds for correct, 7.2 seconds for incorrect, choices. The difference was significant.

In a second experiment 4 elevated pathways spreading fan-wise from a choice platform were used. Fourteen rats were required to take each path once only on any day, in any order they chose. Thirteen solved this problem. The results tended to show that the time spent on the choice platform was longest on the days just preceding solution.

The 2 experiments indicate the possible importance of hesitation at the choice point as a factor in the correctness of choice.

The Use of Discrimination Habits by Rats to Follow the True Pathways of Unfamiliar Maze Patterns. CALVIN P. STONE, Stanford University.

Blind rats were given preliminary training on simple elevated mazes with inclining pathways. The patterns of these simple mazes were changed each trial in the hope of teaching the rats to make discriminatory responses at each crossroad. This result was achieved in approximately 50 trials. Then the rats were confronted with new patterns that had from 12 to 18 choice points. Two trials per day were allowed, and a new pattern was introduced daily. All of the rats demonstrated remarkable ability to follow the true pathway of these complicated patterns. The best performer in a group of 7 made but a single error in 14 trials on 7 complicated patterns. As a general rule each animal made at least 1 perfect run on each new pattern. Choices at the junctures appeared to be based on proprioceptive cues afforded by the inclined treadways.

In a second phase of the study, elevated mazes with horizontal treadways were used. Half of the treadway of each unit was covered with fine wire screening. Two groups of rats were trained daily on simple patterns involving from 1 to 4 turns. For one group the true pathway utilized the screened surface; for the other, the smooth wood. On each trial the pattern was changed in order to set up a discrimination habit at the choice points. After approximately 40 to 60 trials, stable discriminations were established. Next, the rats were given trials on complex maze patterns that required from 10 to 20 choices. Again, the animals demonstrated remarkably good ability to follow the true pathway of new patterns, some of them making perfect runs on from 3 to 5 new patterns and none of them behaving as animals usually do in transfer situations.

The relevancy of these results to published data on maze studies will be discussed.

Application of the Cluster Analysis Technique to Profile Correlations of Rats With Brain Lesions. LLOYD V. SEARLE, University of California. (Introduced by C. W. Brown and R. C. Tryon.)

Scores were obtained in 30 measures of behavior for a total group of 45 rats divided into 4 subgroups, 1 of normals and 3 of operates differing with respect to locus of brain lesions. Behavior profiles, based on normalized standard scores in the 30 variables, were correlated, and the matrix of intercorrelations thus obtained was analyzed for "types" of behavior patterns by the Tryon method of correlation profile analysis. A complicated, but interesting, set of relations was found between clusters and loci of brain lesions.

Comparative Cluster Analysis. ROBERT C. TRYON, University of California.

A comparative treatment is presented of the operational unities discovered by cluster analysis in verbal and performance tests of children and adults, and in learning, motivation, and emotionality in rats. For children, the data analyzed are those of Schiller and of the Mooseheart Study (Holzinger). For adults, the data are those of Schneck, and of the Primary Trait Study (Thurstone). The animal materials analyzed are from the experiments of R. L. Thorndike on different measures of learning, of Anderson on different indices of motivation, and of Tryon on measures of learning and "personality." In each study the various test clusters and relations between them are

presented, and tentative hypotheses of the radical psychological structure of these operational unities are formulated.

A Formalized Method for Constructing Objective Examinations.

JANE LOEVINGER, University of California. (Introduced by R. C. Tryon.)

A method is presented for facilitating construction, on a large scale, of objective examinations. The method consists of having a standard list of relational forms usable for various subject matters. Some relations frequently used in multiple choice and true-false sentences are outlined, together with lists of synonyms and modifiers. Data are presented on the relative validity and difficulty of different forms.

Strong Vocational Interest Scores and Completion of Training in a School of Nursing. JOSEPHINE R. HILGARD, Stanford University.

The Strong Vocational Interest Test was administered to the entering students of St. Luke's School of Nursing in San Francisco, in order to determine the extent to which scores for nursing interest would predict both continuance in training and success in training. The tests were not scored until 2 years of training had elapsed, in order to avoid a spurious influence of suggestion by counselors. It was found that those with ratings on the test below "A" in nursing showed little likelihood of completing the nurses' training course. Of those with "A" ratings who did not continue, the largest proportion dropped out because of low grades. The interest scores of those remaining in service did not predict either grades in probationary courses or ratings of practical work in the wards. For these predictions, an intelligence test was more serviceable than the interest test. Low interest scores predicted chiefly those who would leave training in spite of their ability to do the intellectual work required.

The Social Meaning of Mood. WINIFRED B. JOHNSON, Stanford University.

Data will be presented to indicate that personalities subject to marked changeability of mood are as highly valued in the rôles of friend or associate as are personalities of equable emotional tone. This is (according to current findings) in contrast with the effect on marital adjustment and on personal happiness.

The social meaning of mood will be evaluated in terms of inter-friend judgments regarding certain other aspects of personality. In the thinking of friends and associates the moody personality is prac-

tically synonymous with the highstrung and tense personality. Inter-correlations suggest that (contrary to the verbal mores) the social value of "cheerful" attitudes is very slight.

The basic data for this minor contribution are the pooled rankings of 30 judges applied to each other as 2 groups of subjects (15 in each group). The persons involved had lived and worked closely together for periods of 1 to 4 years. Methodological findings indicate that social judgments so obtained have exceptional validity.

Color Vision in Relation to Artistic Ability. SUSAN ATWELL, Stanford University. (Introduced by P. R. Farnsworth.)

In several of his papers Alfred Adler has stated that inferiorities may result in overcompensation or even talent. As examples he has cited cases of colorblind painters.

In this study, 1213 third-, fourth-, fifth-, and sixth-grade students were given the color vision section of the Los Angeles Art Test, a group test in which the subjects match 48 test colors against 6 standard colors. The children were rated on general artistic ability by their teachers.

Chi squares and critical ratios were computed separately for each grade. In the fourth and fifth grades small but significant positive relationships were found between color scores and art ratings. The trend was in the same direction in the third and sixth grades, but did not reach significance.

These results seem to indicate that for the scholastic levels tested there is an effect which is opposed to what should be expected from Adler's hypothesis.

An Auditory Analysis of the Vibrato. RONALD MAKEPEACE, University of Southern California. (Introduced by Milton Metfessel.)

Recently there has been advanced an hypothesis that the frequency of modulation of the vibrato can be heard as a set of steady pitch components which correspond in position and relative intensity to those which are predicted by a Fourier analysis. Sets of phonograph records were constructed for 4 vibratos with differing rates, extents, and pitches. A set of steady tones covered the extent of each vibrato and made it possible to locate approximately the position of any components which could be heard.

Results indicate that there are salient pitches present, determined by the range and pitch of the vibrato, but that they do not correspond in position of relative intensity to those demanded by mathematical theory.

What Governs the High School Student in His Preference for Plays?

RALPH H. GUNDLACH, University of Washington.

Forty plays were selected and rated by a group of dramatists who, for 2 years, had been producing plays before an extensive high school audience. From 3 to 8 of the 40 plays were read in each of 32 classes in high school English or drama, rated, and compared. From these reports it was possible to work out an approximate rank order for the students. No correspondence exists between the ratings by the dramatic experts and by the students. A basis for analyzing the plays was worked out and the determining factors approximately identified. These factors include the analysis of action, personalities, situations, the intellection, general mood, and the effective climaxes. The bases of the youngsters' selection involve familiarity with the personalities and problems of the characters, and a romantic sentimentality in treatment.

An Analysis of the Behavior of Critics. PAUL R. FARNSWORTH, Stanford University.

It can be argued that consistently similar criticisms of art events must have been written by men of somewhat similar backgrounds. This paper describes an indirect method devised to probe the backgrounds of newspaper art and music critics. The plan was to learn the degree of resemblance between the reviews written by certain metropolitan critics. College subjects of less than average abilities in the arts were asked to read sets of 3 criticisms each and to judge how readily these could have been written by the same reviewer. For comparative purposes the subjects' responses were divided into 2 pools. These 2 groups of students agreed quite well both in their abilities and in their failures to select striking resemblances from among the criticisms. Thus, the experiment has demonstrated that relatively inartistic and unmusical subjects can rate criticisms with considerable consistency.

The Epicurean Theory of Imagination. KATE GORDON, University of California at Los Angeles.

Images of objects continually stream off and enter our minds and are bodily in texture. Novel shapes may be formed by combinations of such idols even before they enter our minds. Visions of the dead are merely such images and are not souls from Hades. When many images from similar objects come to us, combinations are formed which give us concepts or anticipations, so that we can interpret

incoming stimuli. Many idols are in mind which we do not think of until the mind 'strains itself' to be aware of them. This allows for freedom of choice. Yet the will requires an image through which to act. With the dispersal of the atoms of the body all mental life disappears.

Errors in Trial and Error Learning. WARNER BROWN, University of California.

The term 'trial and error' describes a *form of behavior*. A trial and error *situation* is one in which some proportion of the movements are fruitless or perhaps lead to unpleasant effects. Trial and error *learning* occurs if the organism, in the course of successive encounters with such a situation, tends to reduce the proportion of fruitless movements, called "errors."

It has been questioned whether the errors contribute by their occurrence to the process of learning. The answer depends upon (a) the *number* of errors which it is possible to make and (b) the *identifiability* of the erroneous movements—if an error is identifiable there will be a tendency not to repeat it, but, if the erroneous movement is one of a large number of movements with no identifying characteristics other than being "not right," its influence in the learning process will be negligible.

An Experimental Study of Fixation of Response by College Students in a Multiple Choice Situation. ROBERT M. GOTTSACKER, University of California. (Introduced by Warner Brown.)

Subjects were given a semisolvable problem on a multiple choice board. It was found that subjects working under experimental conditions which would make discrimination among choice possibilities poorer than that of the other subjects showed less variability of response. It is suggested that the fixation found by other observers is also understandable on the basis of lack of differentiation among choice possibilities.

Factorial Analysis of Selected Items From the Bernreuter Personality Inventory. G. M. KUZNETS, Stanford University.

Changes in Attitude Toward "Telepathy" and "Clairvoyance" During a 25-Year Period. JOHN L. KENNEDY, Stanford University.

In this paper cultural changes which have taken place with respect to the "feeling of being stared at," the reported frequency of pre-

monitions and visions, and personal parapsychological experience are compared (1) between responses of students in psychology classes at Stanford during 1913-1917 and students in the University at the present time, and (2) between responses of students in 1913-1917 and the responses of a sample of 173 of these individuals contacted again in 1939. The direction of the changes in attitude is in the direction of less belief in telepathic and clairvoyant ability in the groups tested at the present time. Significant sex differences in favor of stronger belief in the women subjects were found in every comparison.

Conditioned Eyelid Responses as Mediating Generalized Conditioned Finger Reactions. ARTHUR A. LUMSDAINE, Stanford University. (Introduced by E. R. Hilgard.)

An "indirect conditioning" experiment, following essentially the procedure of a study reported by Shipley in 1933, was conducted as follows: In the first stage, a faint flash of light was repeatedly followed by a tap on the cheek which evoked a reflex eyelid response. In the second stage, the tap on the cheek was paired a number of times with an electric shock which evoked withdrawal of the finger. In the third stage, or test, the light was presented alone. Conditioned finger withdrawals occurred in an appreciable proportion of subjects in addition to conditioned eyelid responses, although the light had never before occurred in conjunction with the finger response. The finger response was absent if the lid response failed to appear. Photographic recording made detailed analysis possible. These results support the hypothesis that such "indirectly" conditioned finger responses may be mediated by the concomitants of the eyelid response which is a common feature of the 2 conditioning stages.

The Gambling "Instinct." FRANK C. DAVIS, University of California at Los Angeles.

It is suggested that the increased interest in gambling activities during recent years may be investigated as a phenomenon in the general field of human learning. Data collected from habitués of bookmaking establishments indicate the probability that we can ascertain under what conditions gambling arises and also what the effects of habitual gambling are in the individual. The data referred to consist of notes made immediately following interviews with patrons of bookmaking parlors, of notes and diagrams concerning observable aspects of their gross behavior, singly and in groups, prior to, during, and after the running of races, and of check-up data concerning the

validity of the statements made during the interviews. The subjects came from a wide variety of occupational groups and were representative of a similarly wide variety of income levels. The following groups were distinguishable: (1) those who say they play the races every day because they are "fed up with their jobs"; (2) those who, whether or not they are bored with their work, have come to feel that in this present-day world it is sensible to live each day for whatever thrills the day may be made to yield; (3) those who make the vagaries of horse racing their hobby (but these persons, happy enough in their jobs, often follow the races, much of the time, merely on paper, without risking money, and in such individuals the psychological reaction is more intellectual, less emotional); (4) those few individuals who actually do make a living from their betting and have been so doing over a period of time. The persons in the first 2 groups admit that they are losing money, and many of them expect to keep on losing, but they feel that the thrills are worth it. The organic basis of these reported "thrills" is evident, especially when the individual makes a bet much larger than is his custom, in profuse perspiration, muscle tremors, and tic-like responses as the "crisis" reaches its height. Instrumental records of such responses are to be obtained in an extension of the investigation.

SYMPOSIUM

CHAIRMAN, ROBERT C. TRYON, UNIVERSITY OF CALIFORNIA

Psychological Research and Problems of Public Policy. E. R. HILGARD, Stanford University.

Relationship Between Information About the Labor Movement and Attitude Toward Labor Unions. FLOYD RUCH, University of Southern California.

The Value of Experimentally Creating Groups for the Study of Political and Social Issues. KURT LEWIN, State University of Iowa.

The Understanding of Social Issues Requires Participation in Their Solution. RALPH GUNDLACH, University of Washington.

The Importance of Conceptual Formulations in the Psychological Study of Social Issues. FRANKLIN FEARING, University of California at Los Angeles.

Experiments on Democratic and Autocratic Atmospheres. KURT LEWIN, State University of Iowa. (Slides and motion pictures.)

PROCEEDINGS OF THE TENTH SPRING MEETING OF THE EASTERN PSYCHOLOGICAL ASSOCIATION

H. S. OBERLY, SECRETARY-TREASURER, UNIVERSITY OF
PENNSYLVANIA

The Tenth Annual Spring Meeting of the Eastern Psychological Association was held at Bryn Mawr College on March 31 and April 1, 1939. The meetings were attended by 660 individuals, 351 of whom were Members or Associates of the American Psychological Association.

The program included 113 scientific papers, 4 round table discussion groups, and a general session with 3 papers. The presidential address was delivered on Friday evening in Goodhart Hall, Bryn Mawr College, by Karl M. Dallenbach, Cornell University. The title of his paper was: "Pain: History and Present Status." Following this meeting a reception for members and guests was held by Bryn Mawr College, which opened its dormitories and dining halls for the use of those attending.

The American Psychological Association Committee on Displaced Foreign Psychologists sponsored a luncheon which was held on Friday, and the Psychologists' Committee for Aid to Spanish Democracy held a luncheon on Saturday.

Elections. President, 1939-1940: F. L. Wells, Harvard University; Secretary-Treasurer, 1939-1940 (to fill the unexpired term of H. S. Oberly, resigned): Harry Helson, Bryn Mawr College; Board of Directors: Theodora M. Abel, Trade Extension Classes, New York City, 1939-1942; George W. Hartmann, Teachers College, Columbia University, 1939-1942; H. S. Oberly, University of Pennsylvania, 1939-1940.

Committees Appointed. Program: E. Heidbreder, Wellesley College, Chairman; Ross A. McFarland, Harvard University; L. W. Max, New York University. Nominating: George Kreezer, Cornell University, Chairman; Myrtle B. McGraw, Columbia Medical Center; O. H. Mowrer, Yale University.

The Association approved the following recommendations of the Board of Directors: (1) that the future meetings of the Association will be 2-day sessions; (2) that a committee be appointed to study the question of membership as well as the operation of the Association as prescribed in the present by-laws.

The financial statement of the Association for the year 1938-1939 follows:

Income

| | | |
|--|----------|----------------|
| Membership Dues | \$452.00 | |
| Guest Fees | 79.76 | |
| Interest on Savings Account | 4.51 | |
| Redemption of Envelopes | 5.02 | |
| From 3 Organizations for Printing and Mailing Luncheon Notices | 9.00 | |
| | | <hr/> \$550.29 |

Expenses

| | | |
|---|---------|----------------|
| Printing of the Proceedings for 1938 in the <i>Bulletin</i> | \$23.21 | |
| Postage, Telephone, Telegrams | 70.30 | |
| Printing Programs, Mimeographing, and Preparation for Mailing | 138.41 | |
| Corrections to Mailing List | 16.50 | |
| Program Committee Expenses | 24.18 | |
| Secretary-Treasurer Office | 78.34 | |
| Contribution to A. P. A. Committee on Displaced Foreign Psychologists | 50.00 | |
| | | <hr/> 400.94 |
| Profit for the year 1938-1939 | | <hr/> \$149.35 |

Balance Sheet

| | | |
|-----------------------------------|----------|----------------|
| Cash: Fifth Avenue Bank | \$524.62 | |
| New York Savings Bank | 304.83 | |
| | | <hr/> \$829.45 |
| Capital: As of June 1, 1938 | \$680.10 | |
| Profit, 1938-1939 | 149.35 | |
| | | <hr/> 829.45 |

Next Meeting: The Eleventh Annual Meeting of the Eastern Psychological Association will be held in Atlantic City, New Jersey, on Friday and Saturday, April 5 and 6, 1940.

The following papers were presented:

EDUCATIONAL PSYCHOLOGY

CHAIRMAN, G. W. HARTMANN, COLUMBIA UNIVERSITY

The Adequacy of Scales of Developmental and Emotional Age, When Applied to a Group of Deviates. ROBERT L. THORNDIKE, Columbia University.

- Learning Ability as a Function of Age.* DONALD E. BAIER, New Jersey State Hospital.
- The Measurement of Study Habits.* ARTHUR C. HOFFMAN, University of Rochester.
- A Comparison of the Performance of Freshmen and Sophomores in a Beginning Psychology Course.* M. BRUCE FISHER, Rhode Island State College.
- Study of the Reliability and Validity of the Academic Reference Blank.* VINCENT J. SHARKEY and JACK W. DUNLAP, University of Rochester.
- The Science-centered vs. the Student-centered General Psychology Text as a Preparation for Educational Psychology.* EDWARD B. VAN ORMER, Pennsylvania State College.
- Methods by Which Female College Students Select Vocations.* ROBERT TYSON, Hunter College.

ATTITUDES

CHAIRMAN, HADLEY CANTRIL, PRINCETON UNIVERSITY

- An Experimental Study of Social Vectors (Prejudice) in Reasoning.* SAUL B. SELLS, U. S. Works Progress Administration.
- An Analysis of the Operation of Authoritative Standards in Political Judgment.* HELEN BLOCK LEWIS, Brooklyn College.
- Changes in the Attitudes of Student Political Groups Towards Methods of Preventing War as a Result of the Czechoslovakian Crisis and the Peace of Munich.* BERNARD F. RIESS, Hunter College.
- An Analysis of Attitudes Toward Fascism and Communism.* DANIEL KATZ and HADLEY CANTRIL, Princeton University.
- The Isolation and Measurement of General Attitudes.* LEONARD W. FERGUSON, University of Connecticut.
- Attitudes of College Students and of Foremen in Industry on Personnel Policies.* BRUCE V. MOORE, Pennsylvania State College.

SENSORY PSYCHOLOGY

CHAIRMAN, WOLFGANG KÖHLER, SWARTHMORE COLLEGE

- A Substitute for "Cold Spots."* WILLIAM L. JENKINS, Lehigh University.

- Preliminary Report on the Differential Spectral Hues.* D. FARNSWORTH, New York University. (Introduced by Douglas Fryer.)
- On the Neurophysiology of Visual Intensity Discrimination.* A. H. HOLWAY and L. M. HURVICH, Harvard University.
- The Estimation of Relative Saturation.* SIDNEY M. NEWHALL, Johns Hopkins University.
- The Theta Effect: An Experimental Demonstration of Certain Principles in Perceptual Orientation.* FREDERICK C. THORNE, Hunter College.
- Further Studies in Inter-Sensory Gestalten.* G. M. GILBERT, Columbia University.
- Some Variations in the Size-Weight Illusion (Preliminary Report).* K. W. OBERLIN, University of Delaware.

APPLIED PSYCHOLOGY

CHAIRMAN, D. A. FRYER, NEW YORK UNIVERSITY

- Man-caused Forest Fires as a Problem in Applied Psychology.* JOHN P. SHEA, U. S. Department of Agriculture.
- Employee-Choice of Phonographic Music To Be Played During the Work Spell.* JOHN F. HUMES, Pennsylvania State College.
- The Rules of Evidence—An Empirical Study in Legal Psychology.* STEUART H. BRITT, George Washington University.
- Some Factors Which Affect the Outcome of an Interview.* S. M. HARVEY, Smith College.
- Differential Scores of Speaking Ability: Norms for 3 Revised Forms of the Bryan-Wilke Scale.* A. L. BRYAN and W. H. WILKE, Pratt Institute and New York University.
- Relationship of Psychometric Scores to Parole Success of High-grade Mentally Defective Girls.* ROY HAMLIN, Letchworth Village.

BRAIN FUNCTION

CHAIRMAN, K. S. LASHLEY, HARVARD UNIVERSITY

- Vestibular Dysfunction Following Lesions of the Eighth Nerve.* W. D. NEFF, University of Rochester (introduced by K. U. Smith); and K. U. SMITH, University of Rochester.
- Pupillary Function in the Cat Following Lesions to the Striate Cortex.* WILLIAM E. KAPPAUF, University of Rochester.

The Effect of Frontal Lobectomy Upon Weight Discrimination in the Monkey. T. L. McCULLOCH, Yale University.

The Effect of Removal of Both Frontal Association Areas of the Human Brain (bi-frontal "lobectomy"): Report of a Case Without Mental Signs. D. O. HEBB, McGill University.

The Behavior of Decorticate Guinea Pigs. KARL U. SMITH, University of Rochester.

Electroencephalographic Findings in Behavior Problem. W. E. RAHM, JR., Columbia University.

The Comparative Development of the "Occipital" and "Pre-Central" Alpha Rhythms. J. ROY SMITH, Columbia University.

EXPERIMENTALLY INDUCED CONFLICT

CHAIRMAN, H. S. LIDDELL, CORNELL UNIVERSITY

Spatial Gradients of Approach and Avoidance Responses as Measured by a Work Technique. JUDSON S. BROWN, Yale University.

An Experimental Analysis of Approach-Approach and Avoidance-Avoidance Conflict. SEYMOUR G. KLEBANOFF, Yale University.

The Influence of Place of Punishment Upon Behavior in Approach-Avoidance Conflict Situations. NEAL E. MILLER, Yale University.

Behavior Disturbances in the Rat Resulting From Prolonged Training Upon Antagonistic Spatial Habits. H. A. WITKIN, New York University.

"Anxiety States" in Cats Following Experimental Convulsions. JAMES D. PAGE, University of Rochester.

ABNORMAL PSYCHOLOGY

CHAIRMAN, R. R. SEARS, YALE UNIVERSITY

Respiratory "Arrests" During Day Dreaming in Normals and in Schizophrenics. H. BARRY, JR., Tufts College.

Time Estimation in Schizophrenics. J. McVICKER HUNT and HARRIET M. JOHNSTON, Brown University.

Set in the Schizophrenic as Determined by Length of Preparatory Interval in Reaction Time. E. H. RODNICK and D. SHAKOW, Worcester State Hospital.

Endocrinological Treatment of Homosexuality. L. W. MAX, New York University.

A Study of Mental Deterioration in Ideopathic Epilepsy by an Analysis of Word Meaning and Usage. HARRY M. CAPPS, Columbia University. (Introduced by Carney Landis.)

Measurement of Spontaneous Movements in Psychotic Adults by the Time-Sample Technique. MARSHALL R. JONES, Yale University.

Stuttering in Relation to Position in the Family. JULIAN B. ROTTER, Worcester State Hospital. (Introduced by David Shakow.)

ANIMAL MOTIVATION

CHAIRMAN, C. J. WARDEN, COLUMBIA UNIVERSITY

A Study of Food Behavior by the Method of Paired Comparison. W. A. BOUSFIELD, University of Connecticut.

The Effects of Competition Upon Goal-seeking Behavior in the Rat. CHARLES N. WINSLOW, Brooklyn College.

Latent Learning and the Goal Gradient Hypothesis. CLAUDE E. BUXTON, Swarthmore College.

Intensity of Drive and the Behavioral Distance to a Goal. RICHARD S. CRUTCHFIELD, Swarthmore College.

The Waning of Maternal Drive in the Guinea Pig. JOHN P. SEWARD, Connecticut College.

Is the "Sex Drive" in the Male Guinea Pig Specific or General? GEORGENE H. SEWARD, Connecticut College.

Instrumentation in Monkeys on a Multiple Platform Setup. W. GALT and C. J. WARDEN, Columbia University.

Research Film: *The Behavior Pattern of Central American Army Ants.* T. C. SCHNEIRLA, Washington Square College.

GENERAL AND EXPERIMENTAL

CHAIRMAN, S. W. FERNBERGER, UNIVERSITY OF PENNSYLVANIA

Operations in Psychology. FORREST L. DIMMICK, Hobart College.

The Association of Color and Musical Mood. HENRY S. ODBERT, THEODORE F. KARWOSKI, and A. B. ECKERSON, Dartmouth College.

Musical Preferences in Relation to Social Personality. JUNE .

CARPENTER, Connecticut College. (Introduced by John P. Seward.)

Differences in Responses to Good and Poor Poetry. CATHARINE PATRICK, Columbia University.

A Quantitative Study of the Development and Decay of an Experimentally Induced Expectancy. O. H. MOWRER, Yale University.

A Modification of the Ach Test of Conceptual Thinking. J. Q. HOLSOPPLE, New Jersey State Hospital.

Authoritarianism in Science and Extra-Sensory Perception. H. ROGOSIN, New York University.

VISION AND AUDITION

CHAIRMAN, C. W. BRAY, PRINCETON UNIVERSITY

Visual Brightness Discrimination in the Cat as a Function of Illumination. LEONARD C. MEAD, University of Rochester.

Discrimination of Spectral Colors by Chimpanzee. W. F. GREYER, Yale University.

Alterations in Dark Adaptation Under Reduced Tensions of Oxygen. R. A. MCFARLAND and J. N. EVANS, Harvard University.

Hearing in the Guinea Pig Fetus. LEONARD CARMICHAEL, Tufts College.

The Mechanism of Hearing by Electrical Stimulation. S. S. STEVENS and R. CLARK JONES, Harvard University.

The Loudness-Intensity Function in a Region of Impaired Sensitivity. E. H. KEMP and JANE FLANNERY, Brown University.

TESTS AND MEASUREMENTS

CHAIRMAN, R. T. ROCK, JR., FORDHAM UNIVERSITY

Experimental Evidence on the Questionnaire as a Research Instrument. JOHN G. JENKINS, University of Maryland.

A Statistical Method for Determining and Depicting Intra-group Changes of Measure. WILLIAM D. TURNER, Institute of the Pennsylvania Hospital.

All or None vs. Graded Response Questionnaires. EDWIN E. GHISELLI, University of Maryland.

General Considerations in the Selection of Test Items and a Short Method of Estimating the Product Moment Correlation Coeffi-

cient From Data at the Tails of the Distribution. JOHN C. FLANAGAN, American Council on Education.

Teleonomic Description in the Study of Behavior. RAY S. MUSGRAVE, Russell Sage College.

Lateral Dominance in Feet. L. PEARL GARDNER, Cornell University.

GENETIC PSYCHOLOGY

CHAIRMAN, B. S. BURKS, CARNEGIE INSTITUTE

An Intelligence Test for Infants and Young Children. PSYCHE CATTELL, Harvard University.

A Genetic Study of the Naming of Visual Figures. FRANCIS W. IRWIN, University of Pennsylvania.

Three Aspects of the Genetic Development of Abstract Thinking. LIVINGSTON WELCH, Hunter College.

An Application of the Skinner Technique in the Study of Child Behavior. FRED S. KELLER, Columbia University.

Quantitative Measures in Studying the Development of Behavior Patterns Ascending Slides. A. P. WEINBACH, New York City. (Introduced by Myrtle B. McGraw.)

An Improved Discrimination Technique for Use With Young Children. LOUIS LONG, Columbia Medical Center.

PHYSIOLOGICAL PSYCHOLOGY

CHAIRMAN, A. T. POFFENBERGER, COLUMBIA UNIVERSITY

The Effect of Hypophysectomy on the Behavior of Dogs of Different Constitutional Types. W. T. JAMES, Cornell Medical College.

Glandular Dominance in Human Subjects. B. KORCHIN and A. L. WINSOR, Cornell University.

Preliminary Studies of Human Secretory Reactions During Conditions of Tension and Release From Tension. A. L. WINSOR and B. KORCHIN, Cornell University.

Experimental Observations on Changes in Skin Temperature Associated With Induced Emotional States. BELA MITTELMANN and HAROLD G. WOLFF, New York City.

The Effect of 2 Grains of Caffeine (Alkaloid) on the Rate of Adding, Report of Boredom and Other Factors. JOSEPH E. BARMACK, College of the City of New York.

- The Effect of Morphine Addiction and Withdrawal on the Sexual Functions of Chimpanzees.* S. D. S. SPRAGG, Barnard College.
- Psychological Correlates of the Electroencephalogram.* A. C. WILLIAMS, JR., New York State Psychiatric Institute and Hospital.

HUMAN LEARNING

CHAIRMAN, J. W. DUNLAP, UNIVERSITY OF ROCHESTER

- Conditioned-Response Learning as a Function of the Length of the Temporal Interval Between Paired Stimulations.* JAMES S. CALVIN, Yale University.
- Changes Occurring in the Serial Reproduction of Verbally Perceived Materials.* MARGARET E. TRESSELT, Columbia University.
(Introduced by S. D. S. Spragg.)
- Intra-List Generalization as a Factor in Verbal Learning.* ELEANOR J. GIBSON, Smith College.
- Evidence of Organization in the Learning of Nonsense Syllables.* EDWIN B. NEWMAN, Swarthmore College.
- Transfer of Training and Application of Principles.* GEORGE KATONA, New School for Social Research.
- A New Type of Mental Growth Curve.* T. W. RICHARDS, Antioch College.

CONDITIONED RESPONSE

CHAIRMAN, W. S. HUNTER, BROWN UNIVERSITY

- Reflexive and Attitudinal—or Quantitative and Qualitative—Conditioning.* G. H. S. RAZRAN, Columbia University.
- Generalization of Conditioned Psychogalvanic Responses Following 2 Conditions of Reinforcement.* LLOYD G. HUMPHREYS, Yale University.
- Indirect Conditioning of Forelimb Flexion in Dogs.* W. J. BROGDEN, Johns Hopkins University.
- Differential Effects of Curare in the Central Nervous System.* E. K. CULLER, University of Rochester.
- Further Observations on "Conditioning" and "Extinction" in the Spinal Dog.* P. S. SHURRAGER, University of Rochester.

- An Exploratory Study on the Effect of Oxygen Deprivation on Periodic Reconditioning and Extinction in Rats.* CLIFFORD P. SEITZ and FRED S. KELLER, Columbia University.

INTELLIGENCE

CHAIRMAN, L. N. YEPSEN, NEW JERSEY DEPARTMENT OF INSTITUTIONS AND AGENCIES

- The Interpretation of IQ's on the 1937 Revision of the Stanford-Binet Scales.* FREDERICK B. DAVIS, Avon Old Farms.
- A Comparative Study of the 1916 Stanford-Binet Intelligence Test and the 1937 Stanford-Binet Intelligence Test (Form L) on the College Level.* BERNARD SLESS, Temple University. (Introduced by Hughbert C. Hamilton.)
- An Investigation Into Response Patterns on Revised Stanford-Binet (Form L) of Adult Male Delinquents With Mental Age Less Than 12.* SEYMOUR M. BLUMENTHAL, Elmira Reformatory.
- The Performance of Normal and Subnormal Adolescents and Children on a Simple Drawing Task.* THEODORA M. ABEL, New York City; and JANE B. SILL, Yale University.
- Variability in Nursery School.* GRACE E. BIRD, Rhode Island College of Education.

PERSONALITY

CHAIRMAN, R. G. BERNREUTER, PENNSYLVANIA STATE COLLEGE

- Personality Test Scores of Allergic and Nonallergic Children.* OLGA DECILLIS and BERNARD F. RIESS, Hunter College.
- Personal Attitudes of Maladjusted Boys.* LAWRENCE RUBENSTEIN, Hebrew Sheltering Guardian Society.
- A Correlation Study of Parental Influences Upon Adolescent Personalities.* ROSS STAGNER, University of Akron.
- A Personality Schedule for Adolescents.* BEATRICE CANDEE, Vocational Service for Juniors, New York City.
- The Validity of the Bell Adjustment Inventory for College Women.* RUTH A. PEDERSEN, University of Rochester.
- A Preliminary Report of a Psychological Study of the Northern Blackfoot Indians.* A. H. MASLOW, Brooklyn College.

RORSCHACH TESTS

CHAIRMAN, F. H. LUND, TEMPLE UNIVERSITY

An Experiment to Test the Validity of the Rorschach Test. R. NEVITT SANFORD, MARGARET M. ADKINS, and ELIZABETH A. COBB, Harvard University.

Personality Diagnosis in Early Childhood: The Application of the Rorschach Method at the Preschool Level. BRUNO KLOPPER, New York City.

Diagnosis and Prognostic Value of the Rorschach Test in Neurological Cases. M. R. HARROWER, McGill University.

Personality Changes in Insulin-treated Schizophrenics. ZYGMUNT PIOTROWSKI, New York City.

Motivation and Stimulus-Structuration in the Process of Suggestion. THOMAS E. COFFIN, Princeton University.

ROUND TABLES

Functions of the School Psychologist. Chairman, T. E. NEWLAND, Pennsylvania Department of Public Instruction.

The Law of Effect and the Laws of Conditioning. Chairman, W. S. HUNTER, Brown University.

Critical Problems in the Formation and Change of Attitudes. Chairman, DANIEL KATZ, Princeton University.

Mechanisms in Visual Perception-Interrelations of Constancy, Contrast, Conversion, and Adaptation. Chairman, HARRY HELSON, Bryn Mawr College.

GENERAL SESSION

CHAIRMAN, KARL M. DALLENBACH, CORNELL UNIVERSITY

Recent Advances in the Conditioned Response. D. G. MARQUIS, Yale University.

Field Work in Social Psychology—The Study of Unemployment in a Scottish Industrial City. O. A. OESER, University of St. Andrews, Scotland.

Some Problems in the Measurement of Public Opinion. GEORGE H. GALLUP, American Institute of Public Opinion, New York City.

PROCEEDINGS OF THE EIGHTH ANNUAL MEETING
OF THE ROCKY MOUNTAIN BRANCH OF THE
AMERICAN PSYCHOLOGICAL ASSOCIATION

ROBERT H. BRUCE, SECRETARY, UNIVERSITY OF WYOMING

The Eighth Annual Meeting of the Rocky Mountain Branch of the American Psychological Association was held at the Colorado State College of Education, Greeley, Colorado, on Friday and Saturday, November 25 and 26, 1938.

At a brief business meeting, Dr. George T. Avery, of the Colorado State College, Fort Collins, Colorado, was elected Executive Secretary of the Rocky Mountain Branch for the coming 3 years.

PROGRAM

A Study of Personality Factors. W. A. BLAKELY and PHILIP J. THOMPSON, Colorado College.

Twinning as a Factor Influencing Personality. LILLIAN PORTENIER, University of Wyoming.

Student Employment and Student Class Load. J. D. HEILMAN, Colorado State College of Education.

Personal vs. Form Letters for Contacting Prospective University Students. W. P. REED, University of Wyoming.

A Qualitative Study of Types of Social Dominance Exhibited by Albino Rats in the Field Situation. LESTER H. GLIEDMAN and ROBERT H. BRUCE, University of Wyoming.

A Preliminary Investigation of Persistent Non-adjustive Behavior. I. KRECHEVSKY, University of Colorado.

Operationism as Method in Psychology. PAUL CRISSMAN, University of Wyoming.

An Example of the Psychology of Prestige. T. H. CUTLER, University of Denver.

A Summary of Race Psychology. THOMAS R. GARTH, University of Denver.

An Emotional Stability Quotient. V. E. FISHER, State Hospital South, Blackfoot, Idaho.

Some Aspects of the Psychological Care of the Tuberculous. MORTON A. SEIDENFELD, National Jewish Hospital, Denver, Colorado.

Mental Abnormality in Relation to Crime. PAUL DRAPER, Colorado Springs.

The Study of Radio Advertising. RICHARD J. TRIPLETT, University of Denver.

This meeting was held in connection with the Colorado-Wyoming Academy of Science, and the abstracts of the foregoing papers are published in the *Journal of the Colorado-Wyoming Academy of Science*, Vol. 2, No. 5.

THE REQUIREMENTS OF AN ADEQUATE ATTITUDE SCALE

BY LEONARD W. FERGUSON

University of Connecticut

An attitude may be defined as the *acceptance value of a belief*.¹ A belief is that which is expressed in a proposition as the outcome of inquiry (10, p. 7). This implies that by reference to the ongoing process of inquiry the belief can be judged true or false (29, p. 268). The acceptance value of the belief may be quite independent of its truth or falsity. To illustrate, consider the belief expressed in these words: "ESP cannot be explained by the known natural laws of sense perception." Some persons, as is well known, are wholly convinced of the belief expressed by this proposition, while others are quite convinced of the contrary. It is obvious that the statement cannot have 2 truth values, *i.e.* truth and falsity. It is now, or will become, one or the other of these upon continued inquiry into the pertinent phenomena. It is possible, however, for different people to have different acceptance values of the belief ranging from complete acceptance through neutrality to complete rejection. It is this series of acceptance values that constitutes the attitude continuum. The reader will note that this definition makes no assertion as to resultant behavior. Whether or not a person acts in accordance with his attitude is a question quite apart from a definition or measurement of it.

Letting the above definition serve as a brief introduction to the writer's point of view concerning the nature of attitude, he proposes to present a critique of current attitude-measurement methodology. His procedure will be to consider, in turn, each of 7 major requirements for an adequate attitude scale.

(1) The first requirement of a measuring instrument or scaling device is that it shall give results corresponding to an underlying physical order (41, p. 44). Since it is impossible to get any closer to the underlying physical order of an attitude than its expression, it is impossible to test this hypothesis directly in the field of attitude

¹ Suggested by Professor E. W. Hall, Department of Philosophy, Stanford University.

measurement. This can be done, however: There can be adapted for the measurement of attitudes a method which, in other fields of scientific endeavor, has been shown to meet this requirement. This method, then, will be what Dewey, in his recent book, *Logic*, calls a *vera causa* (10, p. 3), i.e. a method which, in some field of inquiry, has been found to give verifiable results and therefore can be considered adequately grounded in the sphere of scientific inquiry. The method which Thurstone and Chave (43) chose as a *vera causa* in attitude measurement was that of *equal-appearing-intervals*. This method, originally developed by Delboeuf for the measurement of sensory discrimination (5), has been found to give results corresponding reasonably well to an underlying physical order (44). It is true that Ament (2) and Hevner (17) have pointed out that stronger or higher stimuli are underestimated in comparison with weaker or lower stimuli, and that Thorndike (40) and Hillegas (18) have found the results to disagree slightly with those obtained by other psychophysical methods. This criticism invalidates the use of the *equal-appearing-interval* method in strict measurement (8), but in the present instance the objection is not particularly cogent because in attitude measurement the method is used only as a scaling device (8). Work done by the writer (12) shows that scale values of statements computed by both the *equal-appearing-interval* and *paired-comparisons* methods correlate $+ .95$ and over, and shows also, contrary to the findings of Hevner (17), that, as far as attitude scales are concerned, the relationship is linear. The only other method of attitude-scale construction that can claim to have as good a basis for being designated a *vera causa* as the method of *equal-appearing-intervals* is the *paired-comparisons* method, but certain limitations, pointed out later, make its unrestricted use in attitude measurement somewhat questionable.

(2) A second requirement of an adequate attitude scale is that scale values of statements chosen as landmarks not be affected by other items in the scale. In the *paired-comparisons* and *order-of-merit* methods the scale value of each item is determined by comparisons with other items in the scale and, thus, is a function of the particular ones included. Furthermore, as pointed out by Guilford (15), when either the *paired-comparisons* method or method of *similar reactions* is used as a single criterion, items having a scale difference of an irrelevant nature may remain undetected and would be given as much weight in determining a person's attitude as 2 items having a relevant scale difference. Some other method must be employed to eliminate irrelevant items from the scale. In the method

of *equal-appearing-intervals* the scale value of each item is determined in such a manner that it is entirely independent of values assigned to other items in the scale. One can substitute items having similar scale values for one another without affecting in any way the scale values of the other items. Likert's (26) and Rundquist and Sletto's (33) methods of attitude-scale construction are as satisfactory in this respect as the *equal-appearing-interval* method, but disadvantages mentioned below render these methods less valid than the latter.

(3) A third requirement of an adequate attitude scale is that attitudes of judges who sort the statements (when scale values are determined by a sorting procedure) or attitudes of persons taking a test (when scale values are based on their responses) not affect, markedly, scale values of the statements. Hinckley, working with scales for the measurement of attitude toward Negroes (19), Beyle, working with scales for the measurement of attitudes toward Alfred E. Smith during the 1928 Presidential Election Campaign (3), Ferguson, working with scales for the measurement of attitude toward war (11), and Pintner and Forlano, using scales for the measurement of attitude toward patriotism (30), have proved conclusively that scale values of items in a test constructed by the method of *equal-appearing-intervals* are not affected by the attitudes of the judges. All reported correlations between the scale values of statements, based on groups of judges differing significantly in their attitudes toward the issues involved, are $+ .97$ or over. This fact has not been demonstrated to be true of scales constructed by methods other than that of *equal-appearing-intervals*. In fact, Sletto (34), using the criterion of internal consistency, has reported that scale values of statements based upon the response of different, but supposedly comparable, criterion groups correlated on the average only $+ .34$ with each other. The highest correlation he reports is $+ .74$. Furthermore, to stabilize the values he found that at least 400 persons had to be included in the criterion groups—a point peculiarly in line with Dr. Strong's experience in determining, by a criterion of internal consistency, weights for the items on the Vocational Interest Test.² On the other hand, results secured by Leuenberger (25), Uhrbrock (45), and myself (11, 12), using the method of *equal-appearing-intervals*, show that scale values based upon the responses of 50, or even as few as 25, persons correlate near unity with those

² Personal communication to the writer.

based on the responses of three or four hundred persons. Consequently, both because of consistency of results and because of the fact that fewer persons are required to give that consistency, the *equal-appearing-interval* method, with respect to this particular point, is vastly superior to other methods.

(4) A fourth requirement of an adequate attitude scale is that it should be quite specific in content. The scales which Thurstone and his associates have constructed seem to meet this requirement better than other types of scales. For example, intercorrelations between various Thurstone scales are, as has been found by T. G. Thurstone (42), Carlson (7), and myself (14), rather low, ranging from .00 to approximately $\pm .35$. This fact, however, is not an advantage inherent in the method of *equal-appearing-intervals*, for scales constructed by the Likert and Sletto techniques could probably be made just as specific in content as those of Thurstone. There are some methods, though, which do actually exclude such specificity. For example, the generalized attitude scales constructed by Remmers and associates (31) are of this type, for the statements in any one scale must be applicable to all of any selected class of attitudinal objects. Another type of scale which excludes specificity is the generalized type constructed by Kirkpatrick (21, 22, 23). This results, however, from his philosophy of attitude measurement rather than from the methodology employed. The reader, no doubt, has noted that the writer has used the word *general* as applied to attitude scales in 2 different senses.

Remmers means by a general attitude scale one that can be applied to any one of a selected class of objects, such as school subjects. The scale may be applied to the measurement of attitude toward any one subject by inserting in the appropriate space the name of the particular subject toward which the attitude is to be measured. The statements in the scale remain the same and have the same values regardless of the subject chosen. Stagner and Drought (38) have found, however, that statements in such a scale should not have the same scale values when applied to different members of the same attitudinal class—a fact which invalidates this type of scale.

The other type of general attitude scale is exemplified by that constructed by Kirkpatrick for the measurement of attitude toward feminism (21, 22, 23). Kirkpatrick states that he believes attitudes are general, not specific, and therefore selects, on *a priori* grounds, items which he thinks will be diagnostic of this generality. It may be that some attitudes are general in content; in fact, the writer agrees with Cantril (6) and G. W. Allport (1) that such is the case; but

he also agrees with Stagner (36, 37) that attitude scales should consist of items quite specific in content. If there is any generality in attitudes it will be possible to extract it from the responses to the specific items or scales. That such is not an impossibility has already been demonstrated by T. G. Thurstone (42) and Carlson (7) in their factor analyses of various attitude scales. Corroborative and more complete evidence on this point by the writer appears elsewhere (14). The point is that the issue should not be prejudged by constructing only generalized attitude scales. The writer does not mean to imply that general attitude scales should not be constructed, for he is preparing for publication 2 such scales. However, the rationale underlying their construction is quite different from that which he is here criticizing. Furthermore, they will meet all of the requirements here laid down for an adequate attitude scale.

(5) Validity seems too obvious a requirement to mention. It is a surprising fact, however, that very few researchers have paid this point much attention. The scales constructed by Thurstone and associates, as one begins to expect, here again top the list. They are validated in the course of construction in that only those items which a sufficient number of persons allocate to the same scale position are chosen for retention in the scale. Secondly, the items meet a criterion of internal consistency—in this case that known as the criterion of irrelevancy. Only those items are retained which, if their scale values are similar, also have a similar number of indorsements. The third way in which these scales are validated is by giving them to criterion groups. Although data are meager on this point, those which have been published indicate that Thurstone's scales differentiate criterion groups fairly well. For example, Stouffer (39) finds a validity coefficient of .81 for the Smith scale for the measurement of attitude toward prohibition when scores on it are compared to ratings based upon the case-history method. Here it may be remarked that attempts similar to that which LaPiere has made to prove the invalidity of attitude scales (24) overlook the very important fact that actual behavior is not an adequate criterion upon which to base the validity of an attitude scale. In spite of that fact, however, Rosander (32) has secured results showing much greater agreement between behavior situations and verbal expression than LaPiere indicates would be probable.

Experimenters other than Thurstone or his students have validated their scales only by some criterion of internal consistency, the inadequacy of which as a single criterion has already been indicated, or have used Thurstone scales as a criterion. This latter method

was used by Likert in the development of his technique for the measurement of attitudes (26), but further comment appears upon this point below.

(6) Reliability, as a requirement for an adequate attitude scale, is as obvious as that of validity, but some comment seems pertinent. Thurstone reports that reliabilities of scales constructed under his editorship are all over .8, most of them being over .9.³ Likert, Roslow, and Murphy (27) report reliabilities for forms of 20 items of the Thurstone scales ranging from .42 to .84, and from .59 to .91 for forms of 40 items; Nystrom (28) reports a reliability of .92; Bolton (4) reports figures ranging from .30 to .46; and Stouffer (39) reports .94. The writer has secured reliabilities ranging from .52 to .80 for the 20-item forms and from .68 to .89 for the 40-item forms. Thus, it is questionable, upon the basis of this evidence, whether the present Thurstone scales are better or poorer than scales constructed by other methods. Since there are 2 forms of every Thurstone scale, however, it is possible to make an additional check which cannot always be applied to other scales. The comparability of 2 forms of an attitude scale may be demonstrated by showing that both lie in the same factor space when the intercorrelations among a number of them are factor analyzed. The writer has already presented evidence that such is the case (14). The largest discrepancy he has found between any one correlation and the average of the set of 4 showing the same relationship for the 45 possible combinations of 10 of the Thurstone attitude scales (*e.g.* War A *vs.* Communism A; War A *vs.* Communism B; War B *vs.* Communism A; and War B *vs.* Communism B) is .12. Most discrepancies were much smaller.

(7) The seventh and last requirement which will be mentioned is that a scale should be a measure of a linear continuum. Thurstone and Chave (43) at one time suggested that the criteria of ambiguity and irrelevance were sufficient to accomplish the selection of statements on a linear continuum, but the writer has shown that such is not the case. In a factor analysis of Peterson's War Scale (13), the writer discovered that 3 factors were necessary to explain the intercorrelations among the items. If the criteria of ambiguity and irrelevance used in the construction of this scale had been sufficient to insure the selection of statements on a linear continuum, a factor analysis should have revealed only 1 factor. Sletto (34) states, without giving supporting evidence, that his "scale-value-difference-ratio" will pick out statements on a linear continuum. From Sletto's

³ Personal communication to the writer.

description of that criterion, however, the writer fails to see how such selection takes place; and, indeed, the findings of Smart (35) and Humphreys (20) that there is only 1 general factor running through all 6 scales that Rundquist and Sletto constructed would seem to indicate that the criterion did not operate to select statements upon a continuum.

Before concluding this article, the writer would like to call to the reader's attention a rather significant point in connection with Likert's technique of attitude-scale construction (26). He has reported that scoring scales by assigning values to different responses of the groups taking the test yields results somewhat more reliable than those secured by the Thurstone method of scoring. He concluded from this fact that a judging group was unnecessary. To establish this point he gave to a group of subjects the Droba War Scale (one constructed by the *equal-appearing-interval* method), asking them to indorse or reject each statement in accordance with the usual Thurstone directions. He also gave to this group this same list of statements (less 2), with 5 possible responses listed in front of each one. These were the 5 usual ones, ranging from complete acceptance of the statement through neutrality to complete rejection. He found, as one might quite obviously expect, a high correlation between these 2 methods of scoring practically the same set of statements. He found, further, that his own method gave the more reliable results. This is, of course, what one would expect, as it has been repeatedly demonstrated (9) that as the number of possible responses increases (up to certain limits) reliability is also increased. Likert concluded from these data that his method of scoring did away with the need for a judging group. A scale which Likert constructed independently of Thurstone's method yielded correlations of only .65 and .71 with the latter; hence the writer believes Likert's conclusion concerning the judging group unsubstantiated.

It is now obvious to the reader that the attitude scales constructed by the method of *equal-appearing-intervals* satisfy more of the requirements than do those constructed by any other method. The two which it doesn't, at present, meet wholly satisfactorily can easily be rectified. The linearity of the scales can be insured by factor analyzing the item intercorrelations and eliminating the irrelevant items; the reliabilities will also be increased by this operation and undoubtedly could be increased further by using Likert's method of scoring.

The immediate need in attitude research is an extensive analysis of the present Thurstone attitude scales, including the factor analyses

of item intercorrelations on each scale for the purposes of purification, validation against more adequate criterion groups, and a more thorough study of the relationships between the various scales.

The writer can truthfully claim that this last statement is not merely an idle admonition to other psychologists to undertake this program, for it indicates a line of research upon which he is already well started.

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EVIDENCE FOR EDUCATIONAL VALUE IN DRIVERS' "CLINICS"

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DeSilva, in his recent comment (2) on Johnson and Cobb's article (6) about statistical fallacies in certain propaganda for the establishment of drivers' "clinics," seems not to have discerned our purpose.

We did not intend to decide whether the test of skills and the personal advice that is based on the results are valuable or not; for on that question we are wholly in doubt, and therefore noncommittal. We sought, rather, to show that certain published findings of DeSilva and others (1, 3) are worthless *as evidence* upon that question, and that the propaganda that has been based upon them is logically invalid.

In order to show that, by relying on a formal fallacy in such an instance as this, one can be misled into a very grave practical error, we presented some results of our own, compiled from (8), in which certain classes of drivers, selected according to the number of accidents that each driver sustained in one 3-year epoch, reduced their group-average number of accidents in another 3-year epoch to one-seventh of the former value. This reduction occurred without expert diagnosis and treatment; it is about as large as any that has yet been claimed as an effect of clinical treatment; and the probability that it is due to chance is practically infinitesimal. Thus, the sampling procedure, which is essentially the same as DeSilva's, may counterfeit an effect of treatment. We therefore proposed certain conditions of sampling and of statistical procedure that have to be satisfied before an effect that may be attributable to treatment can be evaluated or even detected.

DeSilva does not defend his logic, but reproduces some of his data and adds some that he has gathered later, presenting them as if they satisfied the conditions necessary for valid proof. Actually, they do not.

As Cobb and I pointed out, it is necessary to have 2 sample populations, both to be studied through 2 epochs. One sample is to be treated between the 2 epochs, the other not. Each sample must have had the same time, the same distance, the same number of operations, or some other uniform basis, in which to establish its "experience." Within one epoch of the common experience, the 2 samples must be *homogeneous with respect to the frequency distribution of accidents per operator*. To test their homogeneity, it is not enough that the 2 group-averages should be the same; one must make use of some such method as Pearson's test (7, 9) to decide whether one may permissibly regard the 2 samples as having been drawn from the same population.

Suppose that we have applied Pearson's test to the 2 samples in both epochs. If (a) the 2 samples are not homogeneous in either epoch, it is at least difficult, and it may be impossible, to draw a valid conclusion about the effects of the intervening treatment. If (b) the 2 samples are homogeneous in both epochs, we must deny that the treatment was effective. If (c) they were homogeneous in one epoch but not in the

other, a change has occurred that needs to be explained. One hypothesis to be tested is that the treatment produced the change, but many other hypotheses may be equally plausible, and therefore present the same claim to examination. If we eliminate all except the one that attributes the change to the treatment, then according to the direction of the change we may regard the treatment as being either good or bad.

In (2), DeSilva proves that his treated sample was not homogeneous with the untreated sample in the epoch that followed the treatment; he did not show that they were homogeneous before. Without this premise, his conclusion is invalid. To assume the premise, instead of proving it experimentally, is to beg the conclusion.

I should like to remove an erroneous impression which Dr. DeSilva derived from a paragraph in a popular article (5) which I wrote, but which the editors renamed. The paragraph followed a recommendation which was later carried out (8); namely, that a very thorough study be made of the official records kept by certain states to see whether unselected drivers sort themselves into liability classes as certain populations of commercial drivers had done. It began thus: "If we should find that general drivers fall into the same groups as commercial drivers do, an effective remedy"—namely, selective elimination—"would be evident." (Italics not in original.) By treating an hypothetical suggestion as if it were categorical, and by interpreting the word "an" as if it were equivalent to "the only," Dr. DeSilva convinced himself that I have "unbounded pessimism" about the possibility of bad drivers improving, and that I advocate selective elimination as "the only way to cure them." This feeling and this program are not mine. I disclaim pessimism, though I acknowledge skepticism about all plans of salvation until I can identify and judge their fruits. I can be convinced by genuine evidence, and if any is available, I should rejoice to see it clearly, fully, and unequivocally exhibited.

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BOOK REVIEWS

MUNN, N. L. *Psychological development: an introduction to genetic psychology*. Boston: Houghton Mifflin, 1938. Pp. xx+582.

This volume is, without question, the most comprehensive and satisfactory textbook that has appeared to date in the field of genetic psychology. Since the early influence of G. Stanley Hall it has been the American tradition to regard evolutionary as well as developmental psychology as falling within the scope of this field. In most cases, however, the presentation of the phylogenetic material has been brief, sketchy, and more or less dissociated from the developmental treatment. This seems hard to understand in view of the rapid advances that have been made in recent years in the domain of comparative psychology. It is encouraging to note that this fundamental defect in outlook and scope has been remedied to a large extent in the present volume. At least one-fourth of the text is devoted to facts and theories bearing upon the evolution of intelligence in subhuman types. Moreover, a serious attempt has been made to relate this phylogenetic background material to the later treatment of the developmental sequence in man. This broadened conception of the purpose and scope of genetic psychology has been presented very effectively in the first chapter, in connection with the discussion concerning the origins, problems, and methodology of this field.

The second chapter deals with the genetic mechanism in its ontogenetic phase in a clear and concise manner. This topic is further pursued in Chapter 6 in the treatment of prenatal activities. The facts and principles of genetics are graphically illustrated from selected experimental studies on animals. The author adopts a sane, conservative attitude toward the heredity-environment issue not only here, but throughout the volume.

Chapters 3, 4, and 5 are devoted to the general problem of the evolution of behavioral complexity in the phyletic series. While this section of the book is less complete than it might be, the material included has been well selected for the purpose in hand. The first chapter of this sequence deals with the phylogenesis of unlearned behavior, *i.e.* reflexes and instincts. The essential adaptiveness of these types of behavior is stressed by relating such activities to the basic physiological needs of the organism. In this connection, the more important concepts involved in evolutionary doctrine are defined and criticized. The notion of acquired somatic characters is rejected after due examination of various lines of evidence that have been offered in its support. The rôle of mutations in evolution is stressed in harmony with the prevailing views of the experimental geneticists. The author seems to be somewhat confused at this point, however, regarding the rôle of natural selection in evolution. Even Darwin did not suppose that natural selection produced genetic

variations, but, rather, that it determined the survival of such variants. This would be just as necessary in the case of mutations as in that of the fluctuating or continuous germinal variations which Darwin stressed. In brief, natural selection operates only, and always, in the secondary episode of species-formation, regardless of the nature of the germinal variations arising in the initial episode. The other two chapters of this series trace the evolution of the basic sensory-neuro-motor processes, and learning and higher processes, in subhuman organisms. A chapter on the behavioral activities of early man might have been included at this point in order to complete the evolutionary picture. In spite of this omission, however, this section of the book provides an excellent phyletic background for the proper understanding of the behavior of the human child.

The genetic survey of the many aspects of human behavior from the period of birth onward occupies some ten chapters and is as complete as could be expected in a volume intended primarily for class use. It is interesting to note that the development of personality and emotional life is stressed quite as much as are motor activities and intelligence. The final chapter deals with the changes in personality which occur between adolescence and senescence. In most textbooks on genetic psychology this stage of the developmental cycle has been omitted altogether.

Although the treatment throughout the volume is critical in spirit, the style is lucid and interesting. It is a suitable book for the intelligent layman as well as for the more systematic student of genetic psychology. The volume is well illustrated, includes a comprehensive bibliography, and has an excellent index.

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LANDIS, C., & HUNT, W. A. (with a chapter by H. Strauss). The startle pattern. New York: Farrar & Rinehart, 1939. Pp. x+168.

In their introduction, the authors correctly state that significant findings often result from the careful investigation of relatively simple processes. The present volume demonstrates the correctness of this thesis. After a review of the literature on the subject, the authors explain the technique of the investigation, which was the same in outline for all of the special experiments reported. Essentially, this technique consists in the development of high-speed motion-picture cameras in such a way that accurate timing of the onset of the stimulus and of the temporal details of the response can be recorded.

The normal startle response, as previously described by Strauss, includes blinking of the eyes, head movement forward, change in facial expression, raising and drawing forward of the shoulders, abduction of the upper arms, bending of the elbows, pronation of the lower arms, flexion of the fingers, forward movement of the trunk, contraction of the abdomen, and bending of the knees. This is a basic reaction and is not amenable to voluntary control. A striking characteristic of the response is its speed. It usually has come and gone in less than one-half second.

Both repeated stimulation and knowledge of the stimulus may affect the character of the response, but in no simple way.

So-called "voluntary facilitation" of the response shows itself to be really a secondary duplication of the response. Changes in muscular tension and in bodily posture do not apparently affect the response positively or negatively. The pattern can be elicited by sudden strong stimuli of a nonauditory sort. By proper pairing of a previously inadequate stimulus and an adequate stimulus, the response can be conditioned. In general, the Moro reflex, which is dominantly an extension response, disappears in infants before the true startle response is established. The startle pattern in its typical form is found in primates and, indeed, in all mammals, but not in typical form in reptiles or amphibia. There is a tendency for the response to be exaggerated in catatonia and absent in epilepsy. In many other forms of mental illness the response is essentially normal. In the epilepsies the anomalies in pattern are so great as to serve as a diagnostic index.

The book also describes the pattern in the case of deaf subjects, adrenalized subjects, and hypnotized subjects. In the case of the latter subjects, the pattern can be better inhibited under hypnotic instruction than by voluntary control. The neural mechanisms of the response and the correlated physiological and psychological processes are also discussed.

In evaluating the book it may be said that it records a well-conceived and carefully executed series of experiments which give a definite and coherent picture of a simple and yet significant pattern of human behavior. It is a good piece of scientific work, well done and well reported.

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GESELL, A., AMATRUDA, C. S., CASTNER, B. M., & THOMPSON, H.
Biographies of child development: the mental growth careers of
eighty-four infants and children. New York: Hoeber, 1939.
Pp. xvii+328.

In this book four members of the staff of the Yale Clinic of Child Development have presented an instructive array of case histories showing a variety of trends of mental development in young children. The book is divided into a number of sections, each section being written by one of the authors and including a general statement and illustrative cases. The authors point out, repeatedly, that the cases presented in this volume are exceptional ones, selected from a much larger number because of the problems they present and because of their value in showing the types of cases in which prediction is uncertain. Nowhere in the book do they give figures indicating the extent to which these cases are atypical in regard to either the entire population studied by them or the selected groups discussed (such as foster children, twins, or children with physical anomalies). The value of the material in this book would be increased if representative data were included, with statistical descriptions of the mental growth trends in a normal or unselected group of children.

One of the points most strongly emphasized, especially by Gesell, is

that simple numerical quotients, computed from single test scores, oversimplify a complicated set of developmental trends and hence are of little use for prediction of mental growth. However, the authors claim high predictive value for prophecies which are based on adequate clinical studies. In their opinion, clinical judgments should be based on: (1) division of the test scores into five or six categories of behavior; (2) information concerning socioeconomic status and ability of the parents; (3) a knowledge of the child's home environment; (4) the history of his physical growth and health; and (5) the evidence from previous tests concerning his rate of growth and general level of ability. That these clinical judgments actually give better prognosis than simple numerical test scores the reader is apparently expected to take on faith. However, even with this variety of information, the authors have not been able to predict the rates of growth for a large number of the children presented in this book.

Part I, written by Gesell, is devoted to thirty cases which he had described in an earlier publication (1928). He brings their growth curves up to date, usually by means of one or two tests given after a lapse of from four to five years. This is a selected group to begin with, including nine cases with some physical anomalies, such as mongolism, puberty praecox, cerebral palsy, and hypothyroidism. Three cases of feeble-minded children were first tested after the (chronological) period of infancy. Of the remaining eighteen cases, the reviewer has attempted to make a summary which will give some notion of their general constancy of growth rates. To do this the range in IQ or DQ points, as reported by Gesell, was found for each child. These quotients are not always exact, as the figures were not always given. In three cases which were plotted on the same chart it was impossible to select accurately the figures which represented a particular child. For fifteen children the mean range of IQ (or DQ) points is 30. If the three additional cases (whose curves appear to be very consistent) are arbitrarily assigned an average range of 0 IQ points, the mean range for the eighteen cases would still be 25. These means are far larger than the 5 to 7 points ordinarily reported for single retest scores for school children. The greatest change is 60 points for one child whose quotient dropped from 70 at the ages of five to twelve months to 10 at thirteen years. (In this case the clinical practice of weighting heavily the most mature items proved to be misleading, and a more conservative rating during the first year would have given a somewhat better prediction.)

Gesell, in summarizing these cases, says: "In the whole series of thirty diversified specimens there is no instance in which the trend of mental growth appears whimsical or erratic" (p. 102). It is true that all of the cases show mental growth over at least a part of the period, and none shows actual deterioration. In some cases there is a fairly consistent trend in rate of growth. Where shifts in quotients occur, Gesell looks for explanations and is usually able to find them. But there are shifts which he cannot explain—and even those changes for which he finds a reason could not usually have been predicted.

The semilogarithmic curves employed to represent development

emphasize the continuity of growth and mask variations in relative scores. These variations are most effectively masked in the earlier ages when small deviations in rate of growth bring about large displacements in a child's position in his age group. Fluctuations in scores are passed over lightly as not being reliable indications of the child's trend of development. This is very likely true in many instances, and is an indication of the need to repeat tests at successive ages if one would find a child's "true level" of ability. By "prediction" Gesell means only the possibility of determining whether a child will be feeble-minded, borderline, dull normal, normal, or superior. Obviously, prediction within narrower limits would fail in most cases, although, clinically, it is probably not important to make finer distinctions. Still, for these thirty cases of Gesell's, prediction is uncertain even within these wide limits.

In Part II, groups of cases are presented by the different authors. Thompson points out the greater difficulty of detecting superiority in infancy, giving four cases, three of whom did not follow the expectancy from scores made during the first year. Castner presents two cases of delayed language development, one of whom overcame the handicap with training. He presents six cases in which preschool prediction of reading disabilities was fulfilled. His criteria for prediction are interesting and appear to be well substantiated. Castner then presents ten cases of irregular mental development. In a general statement his position is seen to be in certain respects very different from Gesell's. He states: "Although the behavior growth processes have tremendous power to overcome obstacles, the underlying mechanisms are complex and delicately integrated, and the headlong rapidity of their development in the early years of life makes them particularly susceptible to temporary disturbance during that period. As a result, we encounter among infants and pre-school children more fluctuations in development . . . than are found in later years when the organism has become more stabilized . . ." (p. 173). The position taken in this section is that irregularities in mental growth are due almost entirely to hindering factors which prevent a child from realizing his full potentialities; that only rarely does a child "make deceptively high scores that are not confirmed by subsequent examinations" (p. 174). The problem for the clinician, then, is to detect a child's highest potential ability. These statements are not supported, however, because the illustrative cases given are admittedly atypical, and their relative incidence is not stated. Gesell next gives three illustrative cases of the mental growth of prematures, repeating for the most part what he has said on this subject in previous books. He follows with three pairs of twins, and raises the question whether early retardation is typical of monozygotic twins. Amatruda gives a series of thirteen cases with physical complications. In some the physical condition proved a handicap to mental development; in others it did not. She finds that it is often impossible to predict the extent to which a child will overcome the handicap, even where there is injury of the brain. She follows with a section on children in foster homes. Most of the nine cases given here are influenced in their test scores by changes in their environment, but this is not true of all of them. She stresses the

need for caution in making prognoses of mental growth from measures taken in infancy.

In the concluding chapter the authors point out the *individuality* of children's growth careers. They say that "mental growth is both labile and stabile . . . a constitutional core of characteristicness determines the way in which the individual will meet new situations and incorporate them" (p. 305). Because of the lability of mental growth, environmental factors influence its trend to some extent.

The case-history method should prove to be very fruitful in clarifying the qualitative aspects of growth and in bringing to light factors which influence trends of growth. As for the present series of cases, it makes interesting reading and illustrates well many of the generalizations made by the authors. However, the arguments will often prove unconvincing to those not already convinced. The reviewer would willingly accept many of the statements concerning the development of intelligence and would doubt, or take exception to, others; but they are little more than textbook statements which the pupil is expected to read and accept without verification. The principal conclusion that one can draw from these case histories is that early prediction of intelligence from even the Gesell type of clinical appraisal very often fails. In cases where it is important to know a child's mental level we must make frequent tests and rely primarily on recent tests of his ability. It appears in this book that Gesell, while protesting to the contrary, in effect admits that diagnosis in infancy of future mental status is relatively uncertain—except in cases of mongolism, untreated cretinism, or where there are other well-recognized stigmata of feeble-mindedness.

NANCY BAYLEY.

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CONKLIN, E. S., & FREEMAN, F. S. *Introductory psychology for students of education.* New York: Holt, 1939. Pp. v+557.

A good many authors of textbooks on educational psychology seem to be of the opinion that a discussion of some of the principles and factual data of general or introductory psychology is educational psychology. Strange as it may appear, they seem to think that general principles are dynamic and force their own applications. Occasionally, the point is made that the principles and hypotheses of general psychology are not equally applicable to professional educational problems, and that it is necessary to evaluate and make selections carefully in organizing a psychology for teachers. It is also suggested at times that applications here and there to methods of teaching, curriculum organization, and classroom management make a particular organization of subject matter of an educational character. Such ways of thinking, however, do not characterize the authors of the textbook under consideration. They state:

"The authors believe that the present wide interest in child study and in adolescence particularly in normal schools, teachers colleges, and schools of education, is highly desirable so far as our schools and the preparation of teachers are concerned. At the same time the authors hold that the study of

children and adolescence is the more significant the more it rests upon a knowledge of essential psychological materials and concepts" (p. v).

Apparently, child psychology and adolescent psychology are the distinctly professional courses in educational psychology. One might presume that the psychology of the school subjects could be added to these two courses. The introductory course "points" the student for thinking in the purely professional fields. It supplies him with principles that are generally useful. This point of view is, in itself, a distinct contribution—it emphasizes the value of the general principle and at the same time recognizes the place of purely professional training. The reviewer, however, is inclined to question, on psychological and logical grounds, such a division of subject matter. Is it not true that the best type of training is that which is general in its operation, and that a knowledge of child and adolescent development is of much more general value than any teacher or group of teachers in public educational institutions could make of it? That is why teachers colleges, normal schools, and other professional schools, under able and expansive guidance, have found it necessary in meeting the needs of their constituents to provide a type of general training which arts colleges have neglected or disregarded. Of course, the mind is plastic and responds to a variety of influences. It can be compartmentalized, but the disadvantages of compartmentalization are obvious. The bona fide psychologist should be the first person to recognize this—for academic and practical reasons. The authors have struck an important principle in psychology, but they have failed to extend it far enough.

The problems discussed are those commonly recognized as of educational importance. Professor Conklin is responsible for seven chapters dealing with (I) "Introduction" (The human adult and the human infant); (V) "Feelings and Emotions"; (VI) "Sensory Sources of Knowledge"; (VII) "Perception"; (XI) "Thinking"; (XIII) "Handicaps to or Disturbers of Development"; and (XIV) "Fatigue, Sleep, and Drugs." Roman numerals indicate chapter numbers. Professor Freeman wrote eleven chapters on (II) "Original Behavior"; (III) "Original Behavior and Motivation"; (IV) "Personality"; (VIII) "Remembering and Forgetting"; (IX) "The Nature of Learning"; (X) "Conditions and Results of Learning"; (XII) "Attributes of Behavior" (Attention, Interest, Attitude); (XV) "Intelligence"; (XVI) "Measurement of Intelligence"; (XVII) "Individual Differences, Their Nature and Causes"; and (XVIII) "Points of View in Psychology."

One might gain a fairly accurate notion of the method of approach to the various problems by examining two or three discussions. "Original Behavior and Motivation" are discussed in the thirty-eight pages comprising Chapter III. The student of education is told that hunger, thirst, elimination, and rest are motives that cannot be denied. The sexual motive, on the other hand, does not have the same imperative character. It may be sublimated. Parental behavior, curiosity, and the desire for recognition are also discussed. The problem of incentives is presented in four and one-half pages. Group rivalry, encouragement

and discouragement, and Lewin's general interpretation of the effects of punishments and rewards are discussed. Mixed motives and reflexes are mentioned. The problem of motivation and incentives, however, is dealt with again in Chapter IX, on "The Nature of Learning," where the goal is recognized, and in Chapter X, on "Conditions and Results of Learning," where the work of Prescott, on "Emotions and the Educative Process," is quoted. There is also quite a lengthy discussion of "interests" in Chapter XII. The entire discussion seems to be fairly complete from the standpoint of the psychological principles involved, although the reviewer wonders whether the student of education will recognize that a clear understanding of the reasons for action, regardless of the kind, and a determination to do the thing involved are most effective volitional determinants. The most difficult thing to do in writing a general psychology is to achieve a high degree of integration. It is possible, however, that the type of differentiation which the authors have achieved is even more difficult.

"Transfer of Learning" is dealt with in six pages. The studies of James and Thorndike and Orata are given as references. The conclusion, "The foregoing results signify that if the maximum transfer effect is to be achieved, it is necessary that the relevant methods of learning and doing and that the general principles involved in the situation be made explicit and emphasized," is a good example of the careful judgment exercised by the authors. If there is a difficulty it seems to be one of exposition. However, there is a chapter on "Thinking" immediately following. Concept formation, generalization, and abstraction are mentioned.

The chapter on "Fatigue, Sleep, and Drugs" is of general interest and might be found in a textbook for any type of preprofessional training. However, the treatment of each of these problems is rather brief. Fatigue is disposed of in six pages. The student is given only the very early work of Thorndike and Offner as references for further study. The problem of sleep is discussed in five pages, and the references are general. Three pages are devoted to the effects of alcohol, and in these three pages the case is made and closed against the use of alcohol. The effects of caffeine, tobacco, and marihuana are described in four pages. Studies by Hull, Miller and Miles, and Switzer are given as references on the effects of caffeine. No mention is made of the effects of drugs related to caffeine. Hull's study on the effects of tobacco is given as a reference, although the case of tobacco is left in the air, unless one can accept the verdict that no case can be made. Several specific studies on marihuana intoxication are mentioned. Apparently, marihuana has assumed educational importance.

The discussion of retention and forgetting seems to emphasize: (1) the retention of nonsense material, (2) reminiscence, (3) methods of measuring retention, (4) conditions of forgetting, and (5) distortions of memory. The discussion of the conditions of forgetting refers only to studies by Van Ormer, Bassett, Meltzer, and McDougall. These are some of the more important studies prior to 1930. It is somewhat surprising that so little attention is given to a discussion of the effects of

meaningfulness and overlearning on forgetting and retention. The Ebbinghaus curve is important, but the beginning student of education will need it put in a proper setting.

The references for students and teachers are to a few of the "best contemporary presentations of the subjects discussed." The following names appear frequently throughout the book: G. W. Allport, Boring, Cannon, Conklin, Dunlap, F. S. Freeman, Garrett, Gesell, Hull, James, Klineberg, Koffka, Köhler, Langfeld, Murchison, Thorndike, J. B. Watson, Weld, and Woodworth. To be sure, there are other references, but the absence of some is very conspicuous. This type of bibliographical research is followed by a few writers of textbooks, and there are some who do not even go to the trouble of quoting their general sources. From a practical point of view this might be a very poor policy because a good many persons like to have their research used; they seem to feel more or less like the authors of textbooks. General summaries, however good they might be, tend to obscure individuals and probably reduce the sale value of the book. However serious this problem might be, there appears to be a question of much greater importance concerning the advisability of using general references. Principles issue from facts, and facts issue from records made during experiments. Would it not be of considerable pedagogical value to describe outstanding studies in such a way that they could be understood, and show how the principles have issued from the data? This type of presentation could then be followed by a deductive process in which the principles were applied to practical situations. The authors have given an application now and then. Analysis of this sort would make textbook writing more or less difficult, but a textbook of such a character would assist a great many teachers who openly admit they need such assistance. It would also tend to eliminate a great deal of authoritarianism which sophomores dislike.

Any final judgment on a book such as this is a matter of personal opinion. Many will find the organization perfectly satisfactory and will enjoy using the book as a text. The beginning student of education can only profit by the guidance that such an outline affords.

JAMES VAUGHN.

University of Cincinnati.

GRANT, V. W. *Psychological optics*. Chicago: Professional Press, 1938. Pp. 240.

This concise manual is designed to fulfill the needs of the student and the practitioner who are professionally concerned with visual problems. After an introductory treatment of general principles, both psychological and physiological, the author deals with the general theory of visual perception, the perception of space, attention in relation to vision, color vision, and visual illusions.

The reader will not find in this book any basically different viewpoint from that of the familiar treatises on "physiological optics." A "psychological optics," one might expect, would emphasize that there are specifically psychological problems of vision which are to be disposed of neither by physiological nor by epistemological theorizing, and which

demand, for their treatment, a thorough and precise phenomenological analysis of the facts, absolutely unbiassed by any notions as to the *causation* or *philosophical status* of the facts. To the recognition of this principle, insisted upon by Hering, we owe every fundamental advance that has ever been made in the psychology of vision. This principle is far from being generally acknowledged by those who approach the problems of vision from the medical side. There is still a strong inclination to force facts into the pre-established molds of the Berkeleyan or the Helmholtzian or some other philosophy, or into the molds of current physiological theory, before they have received the respectful examination that ought to precede all intellectual manipulation. The present book, unfortunately, simply follows the old pre-Hering tradition.

The following sentence may serve as a sample of the book's attitude toward psychological problems: "When, as was pointed out in Chapter IV, a content of consciousness is discovered which could not, by its nature or by consideration of the character of retinal stimulation, be furnished by the eye, it must represent an expression of the processes of associative memory" (p. 171).

Except for one sentence concerning the Hering color theory, not even the name of Hering occurs in the book. The developments that have been inspired by the phenomenological attitude—to mention only a single example, the important work on space and motion perception that has been done by M. H. Fischer and other physiologists of the Hering school—are not taken into account. Indeed, the author cites no publications in any foreign language, in spite of the fact that the problems of visual psychology have been, for many years, on the whole, only a subject of desultory interest in English-speaking countries.

The author sometimes goes so far as to treat in an *a priori* fashion matters that are properly (and easily) to be settled by experiment—for instance: "It seems doubtful . . . whether a fact unknown to the observer, namely, the difference between homonymous and heteronymous images, can validly be classed among the visual signs of distance. A more plausible suggestion is that the location of double images is judged on the basis of such monocular cues as size, overlapping, etc." (pp. 136 f.). But if one consults, for example, Koffka's article in *Psychologies of 1930*, one will find that there are experiments which conflict with this "suggestion."

In the reviewer's opinion, the best part of the book is the interesting and informative discussion, in the third chapter, of the motor behavior of the eyes.

D. M. PURDY.

Mills College.

DE GRAMONT, A. *Problèmes de la vision*. Paris: Ernest Flammarion, 1939. Pp. 282.

This book deals with the structure of the eye, refractive defects, spatial perception, and color vision. The point of view is more physiological than psychological. Except for a rather bizarre interpretation

of retinal response in terms of "piezoelectric resonance," the book contains little that is novel or original. The style is clear and lively.

D. M. PURDY.

Mills College.

MANOIL, A. *La psychologie expérimentale en Italie.* Paris: Félix Alcan, 1938. Pp. viii+489+16 planches.

This volume summarizes the contributions of Father Agostino Gemelli and his co-workers, Galli, Gatti, Pastori, and others, at the Catholic University of Milan, which he founded, together with the laboratory for psychology and biology. Gemelli first completed his studies in medicine, specializing in neurology with Golgi. Following his period of theological studies as a Franciscan monk, he worked with Golgi, Verworn, and others in physiology. Later he obtained a doctorate of philosophy, founding a neoscholastic journal of philosophy. He then worked with Kiesow, Kulpe, and Kraepelin in psychology and psychiatry, devoting himself primarily thereafter to experimental psychology, but including work on psychology of aviation and vocational psychology. He posits an autonomous science of psychology independent of biology and philosophy, but assuming a psychophysical parallelism, which may be approached from different angles. Present-day Catholic psychologists should find his philosophical conceptions quite helpful as a basis for their psychology.

In Part I, "Studies on Emotions," Manoil reviews all of the major theories of emotions, checked by his own biological experiments, and concludes against any purely peripheral or cerebrophysiological explanation in favor of his own psychophysiological theory of central origins. His later introspective experiments attempted to determine the functional significance of emotions in relation to fundamental necessities of life. Organic concomitants and movements of attraction or repulsion related to organic needs were usually reported and considered to be instinctive.

In psychophysical measurement of two-point tactile discrimination thresholds, unfilled space was found to be overestimated—just the opposite of results of vision. The optimal number of points in filled space, durations, and practice effects was determined. He also considered these experiments as contributions to the psychology of thought and introspective methodology. The method of equivalents (or average error) was later employed extensively in the study of tactile space and weight discrimination as influenced by various skin areas, imagery, blindness, fatigue, attention, etc. Very extensive data are given for numerous related experiments.

Part II includes researches of Gemelli and collaborators after 1921, in the laboratory of psychology of the Catholic University of Milan, where Gemelli founded the first chair of psychology in Italy. The main problems are contributions to the theories of perception, psychophysiological study of language, the selection of aviators, and other studies in applied psychology.

In studies of perception Gemelli emphasizes the influence of purposive sets, a point which is related to his neoscholastic philosophy. All perception is a compromise between the sensorial data presented and the

active attitude (biopsychological needs) of the subject. For instance, Gatti explains illusions in terms of the set with which one approaches the perception, *e.g.* when considered as a simple distance or as a broken series [emphasizing separation (fr., *disjonction*; it., *distacco*)] or as background [emphasizing nearness (fr., *voisinage*)]. According to the principle of *disjonction*, where spatial relations are indefinite their perception occurs in such a manner that the maximum distances are accentuated. Similarly, according to the principle of *voisinage*, the minimum distances are decreased in apparent size. The attitudes adopted are said to follow the law of least action or economy of effort. For instance, all distortions (illusions) have the rôle of permitting an immediate perception of the whole.

Four stages of perception are posited: (1) recognizing presence, (2) appearance of form, (3) grasping of meaning, and (4) naming the object. In meaning, the function of the image is the unification of sensorial data. An intellectual element is also suggested, somewhat in line with the Würzburg school. Gemelli and his co-workers object to the law of *Prägnanz* of Gestaltists and revert to the older emphasis on the importance of attention and previous experience. Contrary to Gestalt, perception is not an immediate datum, but is the result of an active elaboration and integration of sensory data by the observer. These conclusions were derived, in part, from introspective reports on the formation of perceptual patterns during the development of the stimulus figure by an ingenious slow motion picture controlled by the subject. The use of difficult (complex or unfamiliar) figures served the same purpose as slow motion pictures in differentiating stages of perception.

Galli confirms the above finding on perceptual stages by experiments on successive phases of peripheral vision. He also confirms the fact that we may perceive either by parts or by the whole. In studies of apparent movement in combinations of visual, tactile, and auditory stimuli, the bearer of apparent movement was most commonly visual, with tactile next. Combinations of more than three fields did not produce apparent motion.

Minor studies on perception in twilight vision showed that under certain conditions the figure tended curiously to fuse with the ground. The conditions favoring this result included diminishing light, secondary figures in the ground, and motion of the ground. Masking of figures was difficult unless the accessory figures were richer, so as to include the first figure in the new whole.

Electroacoustic studies of language with Pastori employed oscillographic recording along with ordinary observation and analysed the physical bases of vowels, consonants, syllables, etc. in isolation, combination, and under conflicting conditions. The physical structure of sound elements was found to vary with a wide variety of changes in context. Sixteen plates of sample oscillograms are included. Manoil regards these experiments on language as among Gemelli's most important contributions.

Early studies on aviation in 1916 included those on the perception of rotation in horizontal and vertical planes, together with studies of pulse, respiration, etc., under decreasing air pressure. Although the tests

are said to be used at present in the Italian army, no data are given concerning their validation in relation to criteria of actual flying skill. Following minor studies of difficulties in flying, Gemelli recommends the formulation of tests on perception, attention, and emotional stability, but recognizes the nonexistence of a general motor ability.

Smaller studies, including data, are reported on developing tests for vocational selection in a spinning mill and a shoe factory. Tests involving work samples were found to be more closely related to success than were tests of attention, reaction time, tapping, precision of movement, etc.

At the end of the book is a bibliography of about 450 titles and an index.

E. L. CLARK.

R. H. SEASHORE.

Northwestern University.

MUNN, N. L. A laboratory manual in general experimental psychology. (Rev. ed.) New York: Prentice-Hall, 1938. Pp. viii+286.

This revised manual is comprised of sixty-five eclectic experiments which, according to the author, roughly parallel the sequence of Docke-ray's *General psychology* (Rev. ed.). However, the experiments can be used with any text. Like all such manuals, it will not please every instructor, but the large number of experiments included in it will allow considerable latitude of choice to meet individual instructors' needs.

The reviewer's chief criticism is that the difficulty level of the various problems is uneven. Part of this unevenness arises from a lack of completeness of instructions in some of the problems. For example, Experiment 6, on "The Limits of Tonal Sensitivity," calling for the use of Appun's lamella and Konig's bars, does not include specific instructions on counterbalanced orders. After instructing the experimenter to increase the frequency of the lamella until a tone is heard, the manual explains: "... note the frequency of vibration at this setting. Now reverse the procedure. Beginning with a frequency of 24 cycles, gradually reduce the number of cycles until a tone is no longer heard. Average the two determinations. This average will approximate the subject's lower threshold for tonal sensitivity." This would seem to be simplification to the point of almost misinforming the student as to the meaning of the threshold concept. It would seem more informative to use a detailed set of instructions which would better indicate the psychophysical methodology in determining the threshold. The description and instructions for this same experiment in Guilford's *Psychometric methods* (p. 118) illustrate the point and the nature of the criticism. The instructions for many of the experiments give little justification for the statement in the Preface, except at a very elementary level, that "much emphasis has been placed on types of control required in psychological experimentation."

The experiments quite adequately cover the field of experimental psychology, one or more being devoted to various aspects of motor functions, nervous system and nervous mechanisms, sensory sensitivities and characteristics, psychophysics, drives and motivation, fatigue, perception,

emotion, learning, imagery, intelligence, personality, attitudes, abilities, suggestion, and testimony. There are a few relatively unimportant gaps represented by a lack of demonstration of size and color constancies, and insufficient coverage of psychophysical methods.

The learning experiments are especially noteworthy and deserve considerable praise for their selection. These eighteen learning experiments range through conditioned reflexes and animal learning to human verbal and rational learning and are well formulated to bring out the salient features of the process. The inclusion of several animal experiments on drives, activity, and learning seems a very worthwhile addition to the experimental sequence on learning.

The manual makes a generally successful attempt to utilize simple, inexpensive, and usually available equipment. To help those who may not have the equipment on hand, an Appendix gives sources of laboratory supplies that will be needed, together with prices, catalog numbers, and suggestions for fabrication for each experiment.

Each experiment is accompanied by an unusually good list of references (generally at a more advanced level than the experiments themselves seemed to have intended) and a tear-out page of questions with spaces for short answers. The questions attempt to bring out the general significance of the problem and seem, in the reviewer's experience with the manual, to succeed fairly well.

Each page of the manual is perforated for tearing out and punched for binder storage. It has seemed to the reviewer, who has used some of the experiments for his own classes, that page space for answers to questions is wasteful of paper and the student's time. The good student will have more to say than the space allows, and the poor student is satisfied with just enough material to fill the space. This criticism is probably a matter of personal preference on the part of the reviewer and may not be considered an undesirable feature by other instructors.

In spite of some unevenness in the completeness of the instructions and in difficulty, as mentioned above, nearly all instructors of experimental psychology will find the manual useful. The wide range of available experiments to select from, the simplicity of the setups and apparatus requirements, and excellent references make it adaptable to the needs of practically any elementary experimental psychology course. In any case, whether the manual is used as intended or not, it should be an excellent source of experiments, references, and discussion topics. It is particularly worth noting that no systematic point of view, other than objectivity, is represented, yet it would be possible by selecting particular experiments to demonstrate at least one aspect of nearly all contemporary systems bearing on experimental psychology.

JACK BUEL.

Wesleyan University.

BURLOUD, A. *Principes d'une psychologie des tendances.* Paris: Félix Alcan, 1938. Pp. 430.

No small amount of psychological literature induces the impression that as psychology grows older it takes on the characteristics of the sick

man of the sciences. Not a few writers refer to the crisis in psychology and proceed to diagnose its disorders and prescribe remedies. Some point out that the trouble with psychology is that it harbors too many schools and cults. Others find the difficulty in its fundamental principles—for example, it is too physiological or is not physiological enough. Still others complain that psychology is too abstract and remote from the concrete facts of everyday life. Again, some writers believe psychology suffers from being too discrete and lacking in such unity as a central core of individuality might provide.

Burloud finds psychology generally infected with troublesome diatheses. There is discrete sensationalism; there is biological or physiological determinism, bare behaviorism, general mechanism, and the static formism of the Gestalt psychologists.

The author's therapeutic is even more interesting than his diagnosis. According to him the remedy for psychology is contained in the prescription that we should return to Biranism. That is to say, psychology should base itself upon such principles as the intentions, tendencies, *idées forces* of Maine de Biran. To go back to the study of a spiritual subject—namely, to an activity which senses, perceives, imagines, and thinks—will not only give psychology a directing idea, but also a set of primordial dynamic principles. Though Burloud insists upon the subjective and spiritual character of psychological phenomena, he is careful to make plain that he does not imply that psychological life should be independent and separate from the organic, but that the guiding principle should be that of the forces and powers indicated.

Needless to say, the forces and tendencies in their causal efficacy and evolution not only (in the opinion of the author) account for all psychological phenomena, but likewise make available sources of metaphysical principles. Thus, psychology, unlike the material sciences, can establish no laws, but, on the other hand, it has the great advantage of knowing true causes and authentic action. Moreover, it knows these immediately and adequately by an original intuition upon which is founded a positivistic and incontestable method of investigation and interpretation (pp. 426-427).

Despite the fact that Burloud's theses speak for themselves, he attempts to implement them by bringing them into juxtaposition with recent experimental procedures and findings. It may not be supererogatory to point out that the primary significance of this book lies precisely in its exemplification of how mystical doctrines are scientifically implemented.

J. R. KANTOR.

Indiana University.

LUND, F. H. *Emotions: their psychological, physiological and educative implications.* New York: Ronald Press, 1939. Pp. xiii+305.

After a brief introductory chapter in which the identification of emotions is discussed, this book proceeds through a treatment of the neuroglandular basis of emotion, cardiovascular and respiratory changes,

gastrointestinal and sexual changes, metabolic and skin changes, the development and control of emotions, emotion and motivation, and ends with a summary which integrates the whole and suggests further lines of research for the future. The book is primarily physiological in tone. Although Lund defines emotion as "a strongly affective state involving diffuse somatic reactions and rather widespread, centrally aroused, visceral changes," he considers the visceral changes most important and devotes most of his time to them. The neglect of the conscious aspects is striking and is based on Lund's belief that the introspective approach has brought confusion to the field. His identification of what he calls the "mentalistic" approach with a strict dualism may seem a bit anachronistic to some readers.

The physiological emphasis in the book is a healthy one and may help to counteract some of the previous neglect of this approach. The line between general physiology and the special physiology of emotion, however, is not clearly drawn, and there is included in Lund's treatment a great deal of physiology which may be considered as extraneous to emotion. As an example we might mention the two pages of text and the page diagram dealing with the passage of food through the digestive tract. There are about nine pages on normal metabolism and its measurement, and no more than that on its changes in emotion. The chapter on emotion and motivation contains much material on the effects of praise, reproof, and knowledge of results on performance. Unfortunately, this material is included at the expense of further citation of other more relevant material and of a further discussion and interpretation of those researches cited.

Nor will all psychologists agree with some of Lund's neurological interpretations. The frank espousal of F. H. Allport's theory that pleasantness depends upon the action of the craniosacral branches of the autonomic nervous system and that unpleasantness depends on the action of the sympathetic branch will irritate many. The uncritical acceptance of the thalamic localization of emotion is against current trends. There are occasional original hypotheses that are tossed in without adequate defense.

One might also wish that its bibliography were a bit more "up-to-date." There are relatively few titles from the last five or six years; references are made to abstracts of spoken papers where the complete paper has been printed; and the *Foundations of experimental psychology* is quoted when the later *Handbook of general experimental psychology* would have been better.

All in all, it is not a reference book for the scholar. It seems, rather, to be aimed at the undergraduate student and to be available either for a special course on emotion or as collateral reading in other courses. At this level, its oversimplification of problems, the extraneous physiological material introduced, and the overabundance of nonessential illustrations may be virtues rather than a handicap.

WILLIAM A. HUNT.

Wheaton College.

DUNBAR, H. Emotions and bodily changes: a survey of literature on psychosomatic interrelationships 1910-1933. (2nd ed.) New York: Columbia Univ. Press, 1938. Pp. xl+601.

The new edition offers twenty-five pages of new Introduction, and a new bibliography of 106 examples from the 1933-1938 literature illustrative of points in the new Introduction. We are given here the promise of the new journal, *Psychosomatic Medicine*, which has now appeared and which will contain, in early numbers, surveys of various subjects originally dealt with in *Emotions and bodily changes*. It is pointed out that this new project will afford greater opportunity for presentations by specialists in the various fields. Thus may be overcome some of the insuperable obstacles to comprehensive treatment where space is limited. Special consideration is given in the new Introduction to muscle tension, inhibition, specificity of emotions, changing fashions in mortality and morbidity, and to the need for centers of psychosomatic research.

CHESTER W. DARROW.

*Institute for Juvenile Research and
University of Illinois, Chicago.*

SANDIFORD, P. Foundations of educational psychology: Nature's gifts to man. New York: Longmans, Green, 1938. Pp. xv+464.

The author tells us that this book is "the first of a series designed to give a general survey of the foundations of educational psychology." It deals with Nature's gifts to man. The second volume will deal with the psychology of learning. We are not told what other volumes in the series are planned.

This plan to cover systematically the whole ill-defined field of modern educational psychology is an ambitious attempt for any present-day psychologist. Thorndike did it about twenty-five years ago with his famous three volumes. Those three volumes influenced the arrangement and content of almost all books on educational psychology written since that period. In the meantime, however, an enormous amount of work has been done in every area touched upon by Thorndike and in a great many new fields. No one, since Thorndike, has attempted a detailed, systematic treatment. Now comes one of Thorndike's pupils, and we are curious to know how much, or how little, he will include in his total plan. At present we have his first volume and, judging by this, we may expect a lucid and careful treatment of whatever he undertakes to do. For the book is well written and excellently organized. Despite the great amount of research upon which it is based, the argument proceeds clearly from the beginning to the end of each chapter. The author has mastered his material thoroughly and presents clearly the divergent points of view with regard to the many controversial issues that exist. He shows where gaps in our present knowledge exist and points to places where research is needed to fill them.

What, then, does this first volume of "foundations" contain? It is primarily concerned with what man inherits. He inherits a certain type of bodily and nervous organization which tends to respond to the outside

world in certain ways (reflexes, instincts, and emotions), and this inherited constitution is the basis for his intelligence and personality.

The Introduction deals briefly with the methods employed in psychological research, with scientific method in general, and with the various schools of psychology. After this general orientation the author takes up in the first chapter the problem of heredity and environment, emphasizing the fact that they are correlative factors and not opposing forces. The presentation here is very detailed, going into the theory of the gene, describing such matters as linkage and crossing over, giving an account of Mendel's experiments and theory. I feel there is too much detail here for the student of educational psychology and much that has little bearing upon the psychological studies that follow and form the real core of this chapter. This is, of course, a matter of opinion. At any rate, the material is clearly presented and well illustrated by diagrams. After this the author presents the main data with reference to the question of the inheritance of psychological characteristics. He gives many tables showing the original findings of various workers. He evaluates fairly these findings, indicates where gaps in our present knowledge occur, does not take an extreme stand in interpreting them, and reminds us continually that "heredity and environment are correlative factors."

Chapter II shows how the psychologist became interested in individual differences and discusses the findings with reference to race, sex, maturation, and so on. Extreme individual differences in man lead the author to discuss the problems of the blind, the deaf, the feeble-minded, and the gifted. No two psychologists would agree as to just what, of all the extensive research in this wide field, should be or should not be included in such a chapter. I would not devote five whole pages to the detailed results of the Terman and Miles masculinity-femininity scores, but otherwise I think the selection and emphasis of the material is excellent.

Chapter III deals with the physiological bases of behavior. The emphasis here is upon the dynamics of the processes rather than upon the anatomy of the nervous system.

Chapter IV discusses nonvariable or unlearned behavior. Tropisms, reflexes, instincts, and emotions are the main topics. The conditioned reflex of Pavlov and the work of Watson and others are adequately presented. A brief discussion of the various theories of emotions and some of the most important experimental studies of the emotions are included here.

The next chapter covers the nature of intelligence and intelligence testing. There is a very good account of the various theories of intelligence, a brief history of the rise of intelligence testing, a description of our present-day tests, and a discussion of the problems of growth of intelligence, constancy of the IQ, distribution of intelligence, and the like. It is a very good chapter, and it is difficult to see how anyone could have done better in the space at the author's disposal. All the main points are there.

The last chapter is devoted to personality. Our author threads his way skilfully through this morass without becoming bogged down at any one place. Due attention is given to theory. Typology is discussed;

mental hygiene is touched upon, and the various techniques of measurement are described. There seem to me to be fewer presentations of the actual data of personality measurements and experimentation in this chapter as compared with the data presented in other chapters.

These, then, are the six chapters of the book. They cover six important areas in educational psychology. They are full of the main data in each area, presented by means of tables and graphs. There are excellent bibliographies at the end of each chapter. I am sure this book will prove one of the best textbooks in educational psychology. Sandiford is no partisan for this or that theory, trying to convince the reader to accept some hypothesis or other. He tries to be fair to all theories, but puts his main energy into presenting those facts which have been established in educational psychology. Each teacher who uses his book can ride his pet hobbies to his heart's content, but the students will get a solid foundation by following the text. The author's aim to encompass thoroughly the foundations of educational psychology has been excellently attained.

R. PINTNER.

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FREEMAN, F. N. *Mental tests: their history, principles and applications.* (Rev. ed.) Boston: Houghton Mifflin, 1939. Pp. xi+460.

This volume is a revised edition of Dr. Freeman's book of the same title, published in 1926. The revision represents no radical change in point of view. Rather, it consists in the expansion of certain chapters, in the addition of new material and of new references designed to bring the treatment up to date, and in the omission of certain special topics. The new book is forty-three pages shorter than the old.

Comparison of the new and old books, chapter by chapter, will give the clearest notion of where changes have been made. Chapters I and II in the new book, dealing with the history, present status, and early work with mental tests, are essentially the same as corresponding chapters in the old book. Paragraphs have been inserted here and there and the references at the end of Chapter I brought up to date. Chapter III, "The Application of the Correlation Method," contains a new section on factor analysis. Chapter IV, on age scales, contains a description of the 1937 Revision of the Stanford-Binet Scale, plus several minor changes. Chapter VI in the old book, "The Early Development of Point Scales," becomes Chapter V in the new, with no changes. Chapter VI in the new book, "Survey of Point Scales," is Chapter VII in the old book. Additional material has been included in this chapter covering recent tests, and the bibliography has been expanded. Chapter VII, "Tests for the Analysis of Mental Capacity," is "old" Chapter V; there are new sections dealing with tests of music and art and with clerical, mechanical, and other abilities. Chapter VIII, which describes personality tests, is also Chapter VIII in the old book. New sections have been added, describing recent tests of interests, attitudes, and introversion-extraversion; and the references have been brought up to date. Chapters IX, X, and XI, which deal with the techniques and theory of mental tests, are

the corresponding chapters in the old book, plus considerable new material on primary abilities, item selection, constancy of the IQ, and accuracy of scores. Chapter XII, on the tabulation of test results, corresponds exactly to Chapter XII in the old book. Chapters XIII and XIV, which deal with the educational uses of mental tests, are permutations and combinations of the material in Chapters XIII and XIV in the old book. Several changes and additions have been made. The section on the constancy of the IQ in Chapter XIII has been expanded; and new material on ability grouping has been added to Chapter XIV. Chapter XV, "Interpretation of Mental Tests," is "old" Chapter XVII. Several sections have been rewritten and recent developments included; for instance, the Iowa studies of the preschool child and recent work on foster children are discussed. Chapter XVI, "The Nature of Ability," is "old" Chapter XVIII, plus new material on factor theory and minus some of the discussion of Spearman's two-factor hypothesis. Chapters XV and XVI in the old book ("The Application of Mental Tests to Vocational Guidance and Selection" and "The Relation of Intelligence to Delinquency") have been omitted from the revision.

Any author who attempts to summarize a fairly extensive field in a brief space must, of necessity, omit much which others will judge to be important. Dr. Freeman can hardly be criticized on the grounds of omissions alone. But he can, I think, be criticized (1) for inadequate treatment of several important subjects and (2) for frequent failure to bring his treatment up to date. Consider, first, the much discussed topic of factor analysis, to which several sections are devoted in Freeman's book. The discussion throughout is extremely general and not always accurate. For instance, Freeman writes: "In the last dozen years several forms of analysis which are different in detail but based upon the same fundamental principle and interchangeable mathematically have appeared" (p. 81). He then mentions Thurstone's and Kelley's methods, which are not alike in principle nor interchangeable mathematically. Freeman fails to mention Hotelling's pioneer work, upon which Kelley's more recent methods are based. And he omits, also, the important experimental studies of factors by Schneck, Anastasi, DuBois, Bryan, Schiller, R. L. Thorndike, J. W. Dunlap, and others. On page 245, in discussing those factors which have been suggested by various workers, Freeman attributes to Holzinger a list of factors which should be credited to Spearman, and omits entirely Spearman's general factors of perseveration, oscillation, and will. No inkling is given of the fact that factors and factor theory have been severely criticized by several able workers. Surely, the student deserves to be told of the early criticisms of Spearman's two-factor theory by Godfrey Thomson (whose name is misspelled in the Index) and of the general criticism of factors as "mental elements" by R. C. Tryon and G. W. Allport.

Of several other topics Freeman's new book gives a superficial and sketchy account. In discussing the kind of age-progress curve necessary to yield a constant IQ (pp. 291-297), Freeman points out (as in the old book) that either a straight line with increasing scatter as we go up the age scale or a logarithmic curve with constant scatter will give a constant

IQ. But the student is not told just what the most probable form of the mental growth curve is; and the graphic material in the old book dealing with growth in various mental functions—which might help—is omitted. On pages 295–296, Freeman makes a bow to the Heinis growth curve and the P.C., but no mention is made of Thurstone's and Thorndike's mental growth curves in which the attempt was made to measure changes with age in equal units and from an absolute zero. In Chapter X, in the section on "Problems relating to the section and organization of the items of a test," there is no mention of item analysis and only the briefest treatment of test construction. The work of Sandiford and Long, of Lindquist and others is not mentioned. In fact, the material is essentially the same as it was in the first edition—thirteen years ago. The rather futile discussion of Burt's regression equation (pp. 401–403), repeated from the old book, is certainly not calculated to enlighten the student as to the factors which operate in determining Binet mental age. The argument hinges essentially upon one's definition of such factors as school achievement, "reasoning," and age, as Freeman himself points out in a footnote (p. 401).

Chapter VIII, on personality tests, devotes nine pages to the Downey Will-Temperament Test, although Freeman comments (all too correctly!) that "... the prevailing opinion among psychologists is that the test does not measure any real characteristics of the personality" (p. 214). Only one-half page is given to tests of introversion-extra-version; and the discussion of tests of neurotic tendencies, attitudes and opinions, and the like is so brief that the student will get from the book alone little more than a conversational acquaintance with these measures.

It seems rather remarkable that, after thirteen years, Chapter IV in the revised edition, "Age Scales: The Binet Scales," should need only one additional reference (the Terman-Merrill book, *Measuring intelligence*) in order to bring it up to date. Chapter V, "The Early Development of Point Scales," makes no mention of the revisions of Army Alpha by the Psychological Corporation and by F. L. Wells or of the revision of Army Beta; the latest reference is 1931. Careful perusal of Chapters XIV and XV, dealing with the application, interpretation, and uses of mental tests, may well leave the reader wondering whether anything important in mental measurement has happened since 1926. In the five and one-half pages devoted to racial differences, for instance, only one of the six references cited is as recent as 1926; in the six pages which deal with mental test differences shown in various localities and by groups of diverse racial origin, the most recent reference (there are seven) is 1924. Army Alpha, which was more of a test in 1926 than it is now, is still Freeman's stand-by when differences among occupational groups and variations in intelligence associated with schooling differences are to be discussed. F. S. Freeman's and Anastasi's comprehensive treatments of individual differences are omitted along with all recent research. In fact, the student must certainly gather that the last thirteen years have been marked by stagnation in the field of mental measurement.

On the whole, Freeman's book strikes me as a hasty revision of his old book and as a not very thorough review of the field of mental measure-

ment. Professor Cubberley, in his Introduction to *Mental tests*, writes: "The past dozen years have been important ones in the field of mental testing . . . The author in his revision has fully covered these more recent developments and studies and theories, thus making his text again, as it was originally, a comprehensive presentation of the field of mental testing up to the time of issue . . ." Unfortunately, this editorial boost is more optimistic than accurate. In a brief introductory course for undergraduates, Freeman's text will suffice. But for the serious student of psychometrics more and heartier fare should certainly be provided.

HENRY E. GARRETT.

Columbia University.

GRIFFITH, C. R. *Psychology applied to teaching and learning*. New York: Farrar & Rinehart, 1939. Pp. xiii+650.

Those who are constantly searching for a better elementary text in educational psychology must not assume that *Psychology applied to teaching and learning* is merely a further development or minor revision, under a new title, of Griffith's *An introduction to educational psychology*, which was published in 1935. It is true that both volumes are organized around the central concept of growth and that both are ostensibly addressed to students in introductory courses, yet two volumes could hardly be more dissimilar. The earlier volume, in spite of its discursive, wordy style and occasional thinness, was a scholarly contribution, actually addressed to rather mature students, heavily laden with discriminating citations of the literature, and full of illuminating, and even profound, passages. The more recent volume is drastically written down to the level of the much less mature student. Each chapter is introduced by an italicized "Note to the Student." Each of the many sections within a chapter begins with a "Section Preview" and ends with "Summary," "Reading," and "Exercise." The suggested reading is usually a single chapter reference. In the earlier volumes there were no charts; now there are fifty-six, many of which are not relevant to the topics they are supposed to illustrate. In order to be perfectly clear, the author is repetitious. Analogies between physical and psychological phenomena are overworked. The superficial treatment of such topics as mental faculties, original nature, instincts, and heredity in the introductory chapters cannot be other than confusing to the intelligent student. In brief, the volume bears many earmarks of the conscious effort to make things easy for the student while failing to achieve simplicity, directness, and clarity of exposition.

The sixteen chapters cover the topics of growth, maturation, learning, habits, perception, concepts, attention, motivation, emotion, thinking, attitudes, personality, and individual differences. Of these, Chapter III, on the facts and principles of growth, is the most outstanding. The development in this chapter (especially pp. 108-129) of the author's nine "principles" of growth is a model of straightforward exposition at an elementary level and represents, in addition, a stimulating and original analysis.

FRANK K. SHUTTLEWORTH.

Yale University.

CAGE, M. C. *Reading in high gear*. New York: Harper, 1938. Pp. 347.

"*Reading in High Gear* offers assistance and direction to those boys and girls who have not yet attained their reading power." It "is in no way limited to short reading exercises, but from the beginning and all the way through, the aim has been to develop life-long reading habits." This modest aim apparently is to be achieved by study of 109 pages of "lessons in *How to Read*," and use of 105 pages of "practice material with directions and tests, designed to promote the different kinds of reading skills and to appeal to different interests." The student is to keep a record of his score on each of the 103 "tests" and is admonished to "see it grow!" Such a procedure may provide a device for motivating the student but will be of little aid to the teacher, since the tests have apparently not been standardized, as no norms are given.

There is one laudable note of caution in the book. "It is designed to help high school students of normal intelligence who have reading difficulties." Training other than that offered by the book is advised for cases of extreme difficulty, and "physical handicaps should be referred to experts."

The source from which the particular remedial method offered by the book is drawn is a mystery to the reviewer. No reference, published or otherwise, is given as to whether the good "life-long reading habits," or reading habits of any other duration, have ever been achieved by the use of the book in preliminary form or a special course in remedial reading with a similar approach. Nor are principles derived by competent workers in the field offered as a basis. Even the usual "long experience in the field" is not offered as justification. It may well be that the author has had astounding success with her approach over such a period of years that she feels relatively sure "life-long habits" can be achieved by its use. Otherwise, it seems that she ought to be sporting enough to admit that she wants others to bet their money and time on a pipe dream. Certainly, if psychology and experimental education have done nothing else, they have at least indicated that a remedial method could be tried out under controlled conditions before it is published—that is, if its proponent cared to go to the trouble.

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University of Maryland.

BUROS, O. K. (Ed.) *The 1938 mental measurements yearbook of the School of Education, Rutgers University*. New Brunswick: Rutgers Univ. Press, 1938. Pp. xiv+415.

This text is a comprehensive description and evaluation of recent mental tests published in Great Britain and the United States. The term "mental tests" as used in this title includes "aptitude, educational, intelligence, personality, and psychological tests, questionnaires and rating scales." The test descriptions and evaluations were compiled by 133 cooperating test reviewers.

The "1938 Yearbook" is an outgrowth of two earlier publications. The first of these was a mere bibliography of educational, psychological,

and personality tests of 1933, 1934, and 1935. The 1936 edition added a critical part in the form of a book-review-excerpt section.

The 1938 edition gives the following information (when this information is available) about each test listed: title, group for which the test was constructed, date of publication, individual or group, number of forms, time required, outline, publication references, and cost of test.

The descriptions of tests are classified under the headings: (a) achievement tests, general and specific, attitudes and opinions, character and personality, intelligence, group, individual, interests, study habits and skills, vocations; (b) mental measurement books; (c) research and statistical books; (d) regional testing program reports; (e) periodical directory; (f) index of publishers directory; and (g) index of titles and names.

This text is not the kind one would sit down and read from cover to cover. Instead, it is an excellent reference book for all those who are interested in the construction and use of any kind of psychological test. Here, the classroom teacher, the college teacher of tests and measurements, the clinical worker, the personnel director, and the research worker will find in concise, convenient form the pertinent facts about the recently constructed tests, as well as brief abstracts and references to practically all of the critical material about tests that has been written in the last few years. The 1938 *mental measurements yearbook* is the most comprehensive compendium in the field, and it is to be hoped it will be followed up by later editions, if not annually, at least biennially. It constitutes a very complete psychological abstract in this one field.

A. R. GILLILAND.

Northwestern University.

DOLLARD, J., DOOB, L. W., MILLER, N. E., MOWRER, O. H., & SEARS, R. R., in collaboration with C. S. Ford, C. I. Hovland, & R. T. Sollenberger. *Frustration and aggression*. New Haven: Yale Univ. Press, 1939. Pp. viii+209.

"This study takes as a point of departure the assumption that aggression is always the consequence of frustration." Aggression is dependently defined as "that response which follows frustration, reduces only the secondary frustration-produced instigation, and leaves the strength of the original instigation unaffected." Frustration is independently defined as "that condition which exists when a goal-response suffers interference." Again, aggression is independently defined as "an act whose goal-response is injury to an organism."

On the basis of these definitions the assumption and correlates following the assumption are applied in their general psychological reference to "Socialization in America," "Adolescence," "Criminality," "Democracy, Fascism and Communism," and to "A Primitive Society: The Ashanti."

This collaborative effort from the Institute of Human Relations represents an admirable production. The precision and clarity of expression may serve as a model of scientific exposition. The application of this simple assumption to a wide range of problems surrounding the sociali-

zation of the individual and to the reactions of an individual in society at large has been well thought through. The general notion of widening the scope of the application of psychological principles to the problems of contemporary civilization is well done.

The concept that aggression is always the consequence of frustration is, at the same time, one which simplifies thinking while raising any number of new problems, some of which appear to fit the formula. That this monograph should lead to a series of experiments seems both obvious and desirable.

As a production in social psychology this work has much to commend it. It deals not only with unitary and simple experiments, but does attempt, and usually successfully so, to place the implications of those experiments in their proper social reference.

CARNEY LANDIS.

Columbia University.

BRUNTZ, G. G. Allied propaganda and the collapse of the German Empire in 1918. Stanford Univ.: Stanford Univ. Press, 1938. Pp. xiii+246.

This volume is No. 13 in a series of publications from the Hoover War Library of Stanford University. It is written from the point of view of the historian and therefore describes in great detail and with ample documentation the organization and techniques by means of which the Allied propagandists were able to demoralize both the civilian and the military population of Germany during the last war. The writer attempts to measure the effectiveness of this propaganda by reference to the official reports of the Psychological Subsection of the United States Army, the rather clumsy counterefforts of German authorities, the mutinies in, and desertions from, the German Army, and the letters of German soldiers. At the end he concludes that, although "propaganda was only one of the many weapons used in the war to combat the enemy," it "cannot be denied" that it was "an important instrument of warfare."

Scholarly research of this kind, which appears two decades after the events it analyzes have become history, has little explicit connection with the theories of either psychology or social psychology. Naturally, it provides exciting and valuable anecdotes with which students can be stimulated as they are being taught whatever principles of mass psychology their instructor is able to formulate within the loose framework of psychology. At the same time, the work of an historian of propaganda inevitably is challenging to the social psychologist who is interested in systematizing his particular discipline.

The question that excites everyone as Europe plunges forward toward another war in 1939 is the extent to which events of 1914 are about to be repeated. Will the same propaganda appeals be employed again to weaken the morale of the enemy? An actuarial reply may be filled with errors because people and their society have changed in the meantime. The only really constant element in the propaganda situation is the people who are affected. If these historical materials can be reinterpreted in terms of psychological processes which have been exposed and conceptual-

ized in the gentler atmosphere of the clinic and the laboratory, then an insight may be obtained into mechanisms that have been and will be at work. Mr. Bruntz, for example, describes the "internal conditions of Germany" during the latter part of the War and rightly calls them "an aid to propaganda." This means that Germans were psychologically prepared to succumb to the appeals which reached them in such ingenious ways; this means that propaganda helped to release impulses that had already been aroused; this means that a similar procedure can be employed in the next war only under similar psychological conditions which, in turn, may or may not be related to the social conditions of 1917-1918. If the reasons for successful war propaganda are expressed psychologically, more of the *if's* can be specified, and practice and prediction can be guided by a knowledge of the variables that are involved. The enemy will be demoralized a second time—not by repeating the same propaganda but by using propaganda that, being adapted to psychological conditions, will tap other drives and attitudes in more or less identical ways.

From this survey it is possible to recognize once again a severe limitation with which social psychology is confronted. Mr. Bruntz's data are not psychological data, since they are confined to the stimuli (the documents) and to the generalized responses of unspecified people. The responses themselves, moreover, have not been measured except in a suggestive, qualitative manner. War propaganda, then, which is a "psychological" weapon, is really not accessible to the psychologist, since the people involved are dead or changed and since in a future war anyone desiring to conduct a psychological investigation on the spot probably will be accused of espionage. All that can be accomplished through an analysis of this type of propaganda, it seems, is to verify or illustrate established principles in a rather subjective way. In view of his inability to be strictly and thoroughly empirical, the social psychologist is compelled to deduce his explanations as rigorously as possible and to lay bare the precise reasoning he has employed.

LEONARD W. DOOR.

Yale University.

HOOPES, G. G. *Out of the running.* (With a Foreword by E. A. Doll and with Clinical Notes by W. M. Phelps.) Springfield, Ill.: Thomas, 1939. Pp. xvii+158.

This autobiography has as its central theme the manner in which the author has been able to adjust to a rather extensive intracranial birth lesion and to build an enriched and, on the whole, satisfying life with those factors at her disposal. Her expressed purpose in writing the book is twofold: first, to make some contribution to the scientific literature of her defect; and, second, to offer to others who may suffer from the same handicap some courage and comfort. In addition, she has produced a document which may serve as a source book for students of the abnormal.

According to a clinical note by Dr. Winthrop M. Phelps, the lesion is probably extrapyramidal, a hemorrhage into the basal ganglia. As a

result, there is marked motor involvement, including constant athetoid movement of the arms, poor control of both arms and legs, and total inability to speak. On the other hand, there is no demonstrable mental defect, and Miss Hoopes is considered definitely superior by those who come into contact with her. Likewise, there is no evidence of involvement of the frontal areas, and the occasional quirks of temperament which she cites are presumably produced by her circumstances of life.

Miss Hoopes was fortunate in that she was born into a fairly large family of some financial standing; for that reason she has been afforded opportunities which might not be available to another similarly handicapped person. She has had interested and skilled teaching and the companionship of at least one member of her family at all times; various ingenious devices for her comfort and convenience have been provided. As a result, she has been able to receive a great many impressions from the world about her, and she has built up an acquaintance with the fields of literature, art, music, and religion, together with a knowledge of current events. She has developed the ability to communicate with others, although tediously; at times her literary style reflects her impatience at being unable to record as rapidly as she thinks, but she expresses herself clearly and forcefully.

This book makes no pretense as a psychological text; it is therefore not in our province to cavil at the expression of beliefs such as those of prenatal influence and mental telepathy. However, the emphasis on such beliefs makes it inadvisable to put it into the hands of an unguided student. On the other hand, the student of the emotions will find much interest in her discussion of her emotional life.

From his background of long study of the intelligent physical defective Dr. Edgar A. Doll has contributed a Foreword to the book.

HELEN MARSHALL.

Stanford University.

ROSETT, J. *The mechanism of thought, imagery, and hallucination.* New York: Columbia Univ. Press, 1939. Pp. x+289.

The fundamental thesis of Rosett's book is that the mechanisms of thought, imagery, hallucination, and emotional tone can be accurately conceived only on the basis of the "... physiological and anatomical fact that the cessation of activity of a link in the nerve pathway results in a flaring up of the function of the nerve link which succeeds the former in the normal direction of nerve conduction."

Diminution of activity of the sensory receptive areas releases the associative centers from ordinary inhibitions, making possible thought. Thalamic centers may also be released, with consequent increase in the emotional factor of vividness. If release continues to the point that the associative centers are greatly affected, the activity of thought gives way to the production of uncontrolled images and, finally, to hallucinations.

If the associative centers are, in turn, completely disabled, consciousness is lost, and the cerebral motor centers are released. If this wave of extinction continues to the motor centers in the brain stem and cord, the

muscles become flaccid, and the tendon reflexes disappear. All phenomena in general are in keeping with Jackson's Law of Dissolution.

Rosett supports his thesis by the following observations: Destruction of a sensory receptive area results in hallucinations of the affected sensory modality. Similar phenomena may appear if the function of a receptive area is extinguished during an epileptic seizure. Thought is possible only if an active state of attention is maintained, and "in any one state of attention most of the function of sensory reception is therefore in abeyance." The onset of sleep is characterized by three stages: the activity of thought, activity of imagery, and hallucination. These stages are correlated with hypothesized progressive functional extinction of the nerve pathway from the receptor toward the motor centers.

Rosett's position is not supported by all clinical data. The visual sensory receptive area has frequently been destroyed or excised without hallucinations in the receptive field being reported. Indeed, often the patient is unaware of any change in the visual field. Penfield has reported cases of hallucinations following occipital lobectomy, but these were apparently initiated by focal epileptic centers anterior to the tissue excised.

Rosett cites the allied phenomena of attentive states and sleep stages as proving that hallucinations, imagery, and thought are release phenomena, instead of the result of irritating or stimulogenic effects.

At present, however, the neurological correlates of attentive states and sleep stages are unknown. There is no proof that the primary projection areas are depressed before the associative centers.

The psychologist is certain to be disappointed in the completely inadequate psychological references in Rosett's book and the naïveté of the various theories dealing with psychological subjects, particularly learning.

H. F. HARLOW.

University of Wisconsin.

HORNEY, K. *New ways in psychoanalysis.* New York: Norton, 1939. Pp. 313.

This important book is a development of the systematic implications of the author's earlier book, *The neurotic personality of our time*; in it she examines in detail both her differences from, and her agreements with, the classical Freudian position.

The kernel of her viewpoint, as in the preceding volume, is that neurotic disturbances are conflict reactions, due to incompatible strivings for a security that has been threatened by specific factors in the environment. This common-sense viewpoint cuts the ground from under most of the chronically unacceptable Freudian formulations, while leaving the factual observations and the major concepts (repression, conflict, transference, etc.) as valuable as ever. Thus, if neuroses are, basically, modes of defense against insecurity, sex becomes demoted from the source of all motivation to a department in which, as in other departments, insecurity fears are reflected; the Oedipus complex is neither universal nor basically sexual, but represents a kind of clinging for protection;

narcissism becomes one of several possible types of defense—the one in which deflationary invasions are combatted by attempted self-inflation; penis envy is no longer anatomically determined, but is a symbolic formulation of the reaction of women to cultural factors threatening their security; the destructive impulses are not due to any generalized death instinct, but are attacks upon a hostile environment; the period of childhood is only one part, though possibly the most important one, of the character-forming history of the individual; transference is not only a reactivation of former dramas, but is a sample of present attitudes; culture is not simply a repetition and outgrowth of long-ago happenings, but promotes or guards against neurosis according to the insecurities which it fosters; the “ego” is a neurotic structure rather than a psychic “instance”; anxiety is a result of inescapable threats to the safety devices; the “super-ego” is another “neurotic trend” (*i.e.* safety device), and guilt feelings are a similar anxiety reaction; masochism is another of the main types of safety device, coördinate with narcissism, *i.e.* it is the kind of defense which operates through dependency and unobtrusiveness. There are also excellent chapters on the fundamentals of psychoanalysis (which will be a boon to the harassed student who has wondered what, amid all of the obvious fantasies, really *is* important); on the basic premises of Freud’s thinking, *e.g.* biologism in its less sophisticated nineteenth-century forms; and on the implications for therapy, which in the author’s view is fairly active and oriented to the present character structure and relationships rather than toward an hypothetically determining past.

It hardly needs to be said that such a radical overhauling—so similar in its results to what sympathetic psychologists have been saying for a long time on a mainly dialectical basis—coming from a person highly trained in the classical tradition and tempered by the flow of fifteen years’ case material through her consulting room is of revolutionary significance. We suppose that Dr. Horney will be “read out of the Party” in several quarters, but, since recent events have transplanted the psychoanalytic movement bodily to democratic landscapes, there seems little doubt that her views will have an opportunity to influence theory and practice greatly; they have, in fact, a considerable similarity in attitudes to those of the common-sense, nonmystical, American and English analysts of the type of Sullivan, Hill, Sharpe, and Isaacs.

It is just possible, however, that Dr. Horney has not gone quite far enough. One of the bases of her opposition to the Freudian theories is their genetic quality; understood as she understands it (which is probably an accurate reflection of the way Freud understands it)—namely, as a conviction that later experiences are simple repetitions of earlier ones, with the corollary that recall of the earlier will abolish the latter—this opposition is no doubt justified; but the choice of the term has derailed valuable portions of the argument. It is hard to understand how a satisfactory account of human development (and maldevelopment) can be given which is not genetic in the correct sense of the word; and the failure to give a generalized genetic hypothesis of development is the book’s most conspicuous omission. (Freud gave one, though it is, for the

reasons Dr. Horney has cited—among others—unacceptable.) Such an hypothesis needs development at three points, and at none of these does Horney reach maximal clearness: (1) Some account should be given of just what happens when the child is made to feel “helpless and defenseless and . . . [to] conceive the world as potentially menacing.” In psychological terms, we need a clearer account of the characteristics of the stimuli and their mode of operation which lead to conflict and frustration. It is true, but not adequate, to say that “disturbances in human relationships become the crucial factor in the genesis of neuroses.” (2) A more systematic account should be given of the modes of reaction to these conflict stimuli. Dr. Horney gives the impression of stopping just short of this; the following can be gleaned from her pages: A child threatened by his environment may fight, which is not a “neurotic trend”; he may theoretically (but not usually practically) escape, which is also not a “neurotic trend”; he may develop a supplicating or clinging reaction (masochism, *Œdipus complex*); he may develop compensatory self-inflation (narcissism); or he may attempt rigid compliance with the demands upon him (perfectionism, *superego*). Psychologists would like to know such things as: Is this a complete list? Do these reaction types overlap? What is their basis? How could their determination be at least partially objectified? (3) A clearer theory of therapy is badly needed. Dr. Horney's account is that examination of the neurotic character structure and its relation to the patient's adjustment makes its inconsistencies and disadvantages clear to him, modifies his anxiety, and thus makes it possible for him to give up his “neurotic trends” as unnecessary. This may be the best that can be done at the moment, but we still need to know how this kind of additional stimulation comes to induce this kind of reaction in the patient; the matter is of far more than academic significance, for, evidently, if we knew how certain stimuli modify anxiety we could apply them earlier and perhaps prevent its formation. To summarize this whole matter, Dr. Horney is vaguely, but not clearly, aware of the general concept of learning, which she conceives in sociological terms; she understands that “environments” and “human relationships” have a major part in “forming character,” but she has not taken the complete step of seeing the organism as played upon continuously by stimuli of various sorts, being constantly modified by them, and so presenting a different set of habit patterns (including visceral and ideational ones) to be modified by successive stimuli. Among the consequences of such a thoroughgoing psychological view would be the concept of therapy as additional stimulation, in which, no doubt, the principle of extinction of inhibitory habits would play an important part. Another would be the better evaluation of the terms “neurotic” and “normal,” which now bear traces of their medical origin, in Dr. Horney's argument, in a sort of recurring differential diagnosis: the neurotic person has such and such characteristics, as distinguished from the normal, who has something else. But if we adopt a generalized concept of the sort indicated, some of the interest can be diverted from the drawing of boundaries, to become available for description of stimulus-response histories of all kinds, from “normal” through “neurotic” to “psychotic”; and we shall presumably find these

to be of all degrees of individual complexity, but continuous and with a few unifying threads running through them, which threads would be nothing less than the basic principles of affective psychology.

The author is moderately unsympathetic toward attempts to think physiologically about psychoanalytic phenomena, and recognizes correctly that Freud's "economic" and "dynamic" thinking, in spite of figures of speech, is so oriented. This lack of sympathy would seem to close doors unnecessarily; granted that the subjective quality of anxiety or desire is *sui generis*, there are evidently important physiological bases or at least concomitants; and the nature of libido as Jung understands it, *i.e.* as general drive, is surely a problem which can be ignored by no careful approach to affective problems. Again, the conditioning approach seems even more promising.

A chapter deserving of special mention is that on the rôle of culture in neurosis (we should prefer to say, in line with the considerations above, in adjustment). It contains a careful analysis of just what factors in a culture can be considered pathogenic, with applications to our own culture. For example, there are "factors . . . which create emotional isolation, potential hostile tension between people, insecurity and fears, and a feeling of individual powerlessness"; these include the system of individual competitiveness, gross inequalities (of opportunity as well as possessions), and exploitation. Again, "there is the question of how our culture impairs self-confidence . . . The individual's existing limitations . . . should not impair his self-confidence; but by virtue of the fact that external limitations are only slightly visible, and particularly by virtue of the ideology that success is dependent on personal efficiency, the individual tends to accredit failures to his own deficiencies. . . Furthermore, the individual in our culture is as a rule not prepared for the hostilities and struggles that are in store for him." This type of analysis seems to be new (though foreshadowed in the "Neurotic Personality") and pregnant with social and educational implications of the highest significance.

The book may be counted as perhaps the fourth major systematic critique of Freudian psychoanalysis, not including Parthian shots by the secessionist schools; it is, however, the first which has proceeded from a basis of experience and careful observation, and the first which has tried judiciously to assess strengths and weaknesses and their causes. The job has probably been done well enough on the negative side so that no one need spend further time or energy on it; better, an admirable job of reconstruction has been started, which can be forwarded with entire self-respect by every school of human thought that is seriously concerned with affective phenomena.

RAYMOND R. WILLOUGHBY.

Brown University.

HOORON, E. A. *Crime and the man.* Cambridge, Mass.: Harvard Univ. Press, 1939. Pp. xvi+403.

This volume is a semipopular presentation of voluminous anthropometric measures of 17,680 individuals, from sane civilians to insane crimi-

nals. More technical treatment of the same data has been published in a separate volume, and more is promised.

All the statements of the book, when "gestaltized," result in "a declaration that the primary cause of crime is biological inferiority" (p. 130). Hooton points out that different animals behave differently because of their respective organisms; for example, human mental processes and behavior differ from those of the anthropoid apes because of differences inherent in the organisms. He does not want to be interpreted to mean that any particular organic structure is directly causally related to any specific behavior.

The bulk (10,953) of Hooton's measurements were made with prison and reformatory inmates. He tags as "stupid" the objection that such samples of criminals are the failures of the criminal population.

As a criterion of significance of the numerous differences in physique, he used three times the probable error of the difference in means—a none-too-stringent requirement. As a result, he found that, with thirty-three measures of cranial, facial, metric, and morphological features, the criminals of Massachusetts, Tennessee, Kentucky, Texas, North Carolina, Wisconsin, and those of Arizona, New Mexico, and Colorado grouped, each had patterns of significantly different features. In this study he counted only the "Old American criminals," after Hrdlička's definition of "Old Americans." He has illustrations of front and side views of what he calls "mosaics," depicting the heads of the various State criminals on the basis of their significantly different characters.

Then there are the different types of crime for Old Americans, for which schematic mosaics are presented. First-degree murderers, for instance, are significantly different from other criminals in excesses of stature and jaw breadth, to mention two out of their ten divergences out of a possible thirty-nine. Second-degree murderers significantly exceed other criminals in five items, two of which are excess of chest depth and deficiency of head height.

Hooton relates his nine body-build types of Old Americans—all combinations of three degrees of weight and height—to types of crime. As examples, short-heavy men rank first in rape, tall-slender men are first in robbery and second-degree murder, tall-medium-weight men are first in forgery, fraud, and extractives, and tall-heavy men lead in first-degree murder.

Another sample of the kind of differences Hooton found is that robbers had significant excesses over other criminals in nine items, such as attached ear lobes and iris diffused in pigment. Now, only 11.74% of robbers had such an iris, as compared with 8.60% of the other criminals. Thus it was that he found six robbers out of 414 who had no robber characteristics, and one robber had seven. No robber had eight. Hooton heads the chapter in which these data are given "The Will-o'-the-Wisp Criminal."

It is impossible here to do justice to the multitudinous differences between Old American criminals and civilians, new American criminals and civilians, various races among white Americans with each other, the criminal and civil insane, and negro and negroid criminals and civilians.

The important point is that many specific differences were found, no matter what comparisons of groups were made.

Hooton emphasizes that comparisons of criminals and civilians should be made only within an ethnic group. When such comparisons are made, the criminal is of inferior physique. It would be interesting to know whether crime would be interpreted as an absolute or a relative biological inferiority. If mediocre physique in an inferior ethnic group would be equivalent to inferior physique in a superior ethnic group, in each case would criminals be found among the inferiors of their group? Or again, how many of the differences he found are aesthetic inferiority rather than biological inferiority?

The book is entertaining—in fact, so much so that one wonders whether the author might not, in the privacy of a little circle of friends, say: "And those people took me seriously!" On that possibility, all is forgiven, and he will be taken seriously, in spite of his wisecracks about himself and his work, which give some readers an impression of protective facetiousness.

MILTON METFESSEL.

The University of Southern California.

WINN, R. B. *Scientific hypnotism: an introductory survey of theory and practice.* Boston: Christopher Publishing House, 1939. Pp. 168.

This small, popularly written book, though not as scientific as it might be, will not harm the laity, because it is "proper" in seeking to explain the phenomena in naturalistic terms and it is "safe" in demanding that hypnosis be used only by professional people. On the other hand, it contains little which is not available elsewhere. Because of its insistent scientific claims and because of the possibility that others may be interested in the way that the author—a partially converted philosopher—handles the well-known data, a more detailed criticism follows.

Part I, "Theory," presents a mélange of mentalistic and organic concepts, eventuating in this definition of suggestion: ". . . it is a prestige-and-faith relationship in which the practitioner uses his advantageous position to influence by suggestion the subject's autonomic nervous system, in order to effect desired bodily inhibitions and excitations and to condition his mind accordingly" (p. 86). All psychoanalytical concepts are condemned, along with any other functional concept. But, as one might surmise from the definition of suggestion, the explanation of phenomena wavers between organic and functional concepts, as occasion demands (cf. pp. 66 and 134).

Part II, "Practice," tells how to hypnotize, discusses dangers, describes "oneirosis" (a light form of hypnosis), gives details of a group experiment, and lists applications in psychology, medicine, and education. "Conclusions" lists nineteen propositions summarizing "the positive results attained in the course of my studies"—which are nothing new. "Oneirosis" is new only in name, if that, and is described without reference to Hadfield's hypnoanalysis, Schultz's autogenic training, etc.

While flaunting his scientific approach, the author uses only a dozen of the 150 studies reported in the last ten years, nor does he deal with

those (along with some other older studies) rigorously. He does deal, of course, with much of the stock in trade of hypnotism. The author's inadequate orientation in the field may be observed from the following illustrations: Mesmer attempted to raise "suggestion [*sic*] to the level of practical science" (p. 15); hypnotic study bids for acceptance "into the family of recognized sciences" (p. 16); hypnosis is "merely a state of high suggestibility" (p. 43); yet "the cooperation of the subject usually decreases with the deepening of the trance" (p. 124); earlier successful time-evaluation experiments are cited but not later unsuccessful ones (p. 109); G. H. Estabrooks [allocated to psychiatry] is twitted for explaining hypnosis by reference to the unconscious—"what is it, mere naïveté?" (p. 77); the work of C. L. Hull and associates [allocated to medicine] is characterized as follows: "But here as elsewhere the research is being conducted largely at random and by guesswork, without sufficient directives of a comprehensive theory and without adequate controls of experimental technique. In psychology and education, on the other hand, even these signs of interest are lacking" (p. 131); and finally, reaching the climax of disorientation, the author uses O. H. Mowrer's note reporting diminution of tonic rigidity, with repeated hypnotizing of a rooster, to show that there is "some danger that the efficacy of posthypnotic suggestion will be reduced by repeated sittings" (p. 111).

This disregard for rules holds for the un-English style of the book, a style partly explained by the statement made on the jacket that the author came to this country in 1923 from Finland. But such an explanation hardly excuses the editor and the proofreader for countenancing such expressions as the following: "Finally, the day has arrived, and I was ready" (p. 159); "they let imagination break the boundaries of the common sense" (p. 54); "I do not mind even to try my own hand" (p. 99).

This book illustrates some of the difficulties with which hypnotism has been beset both in its experimental aspect and in its presentation in print, even at the hands of those who, like the author of the book under review, are apparently trying hard to do it a good turn.

PAUL CAMPBELL YOUNG.

Louisiana State University.

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- TRYON, R. C. *Cluster analysis.* Ann Arbor: Edwards, 1939. Pp. viii+122.
- WITTY, P. A., & SKINNER, C. E. (Ed.) *Mental hygiene in modern education.* New York: Farrar & Rinehart, 1939. Pp. x+539.

NOTES AND NEWS

DR. ERICH GOLDMEIER, PH.D., M.D. (Frankfurt), recently of the Jewish Community Hospital in Berlin, has been appointed research associate in psychology at Wheaton College, Norton, Massachusetts, where he will assist in research in the psychological laboratory.

DR. THOMAS R. GARTH, since 1930 professor of experimental psychology at the University of Denver, died on April 20 at the age of sixty-seven years.—*Science*.

DR. ALBERT A. CAMPBELL, of the department of psychology at Northwestern University, has been appointed to a Social Science Research Council Fellowship for the coming year. He will probably spend the year at Cambridge University, working with Professor Bartlett on problems in social psychology and anthropology.

THE following have been appointed Consulting Editors for the *Journal of Experimental Psychology*, beginning with the July issue of that journal: Charles W. Bray, Princeton University; Elmer K. Culler, University of Rochester; Clarence H. Graham, Brown University; Joy P. Guilford, University of Nebraska; Francis W. Irwin, University of Pennsylvania; Donald G. Marquis, Yale University; Arthur W. Melton, University of Missouri; and Carroll C. Pratt, Rutgers University.

THE honorary degree of doctor of science has been conferred upon Dr. Raymond B. Cattell by the Senate of London University for researches on the nature of temperament, its manifestations, measurement, and dependence on environmental and hereditary influence. Dr. Cattell is now associate professor of genetic psychology at Clark University.

THE May issue of the *American Journal of Sociology* was devoted to a symposium upon: "The Relation Between the Individual and the Group." It contained contributions by investigators in psychology, psychiatry, sociology, and cultural anthropology. The contributors in psychology included: R. S. Woodworth, J. E. Anderson, J. F. Brown, K. Lewin, W. E. Blatz, and F. H. Allport.

THE Board of Directors of the National Committee for Mental Hygiene have announced the appointment of Dr. George S. Stevenson as medical director, succeeding Dr. Clarence M. Hincks, who has asked to be relieved of his duties, except as part-time field consultant, in order to give more time to the work of the National Committee for Mental Hygiene of Canada, of which he is general director and founder. H. Edmund Bullis, who has served as executive officer of the National Committee and as assistant to Dr. Hincks, is continuing on the staff as part-time business manager.

DR. HENRY J. ARNOLD, professor of psychology and director of the Division of Special Schools at Wittenberg College since 1925, has been elected president of Hartwick College, Oneonta, New York, effective September 1. Dr. Arnold was one of the founders of the Ohio Association for Adult Education in 1932 and has served as president of the Association since that time. He has served as president and secretary of the Psychological Section and as president of the Adult Education Section of the Ohio College Association.

DR. RICHARD S. SOLOMON has resigned his position as instructor in psychology at Syracuse University to become staff director of the Personnel Institute, Inc., of Chicago. The Personnel Institute is a private organization which specializes in personnel control, job analyses, and vocational guidance.

THE American Association for Applied Psychology will hold its annual professional conference December 1-3, 1939, in Washington, D. C. The Association had voted to meet with the International Congress of Psychotechnology, should it be convened in America, but that has proved impracticable. The by-laws of the Association provide that "insofar as possible the Association shall coördinate its program with that of the A. P. A." It did not seem the part of wisdom, however, to take the annual meeting of so young an Association so far from its center of population as would have been necessary if it had met this year with the A. P. A. The Association voted, therefore, to meet this year in the East at a time not in conflict with the A. P. A. meeting. There is no implication that the 2 Associations shall continue to meet separately.

THE Washington-Baltimore branch of the American Psychological Association held its final meeting of the year at the University of Maryland, College Park, Maryland, on May 12. The following program was presented:

DR. R. M. BELLOWS, University of Maryland: "Evaluation of Methods for Selecting Dental Students."

MR. L. S. GUEST, University of Maryland: "Study of the Immediate Recall of Radio Advertising."

DR. JOHN FINAN, St. John's College: "Strength of Conditioning Under Varying Degrees of Hunger in Rats."

DR. KARL M. DALLENBACH, Cornell University: "Movies of American Psychologists."

The following officers were elected for the coming year:

President: Dr. Sidney M. Newhall, Johns Hopkins University.

Vice-President: Dr. Stuart Henderson Britt, George Washington University.

Secretary: Dr. Edwin Ghiselli, University of Maryland.

Treasurer: Mrs. Mildred St. M. Percy, District of Columbia Public Schools.

PROFESSOR GEMELLI reports that in the National Board of Researches, a State organization which patronizes and supports scientific researches in any field, a Permanent Commission for the Application of Psychology has been recently appointed. The aim of this Commission is to promote among State institutions, labor organizations, and private persons the application of psychology in any field, with regard to selection and orientation as well as to the organization of work. At present, applications in the scholastic field, where professional orientation has become a function of the school, are being studied; applications in industries, aviation, and public transport will follow. The Commission is presided over by Professor P. Agostino Gemelli and includes both psychologists, among whom are Ponzo, Banissoni, Ferrari, Jr., Marzi, Galli, Colluci, and Galdo, and officials of State institutions, which purpose to use such applications of psychology.

Philosophic Abstracts, a quarterly review of philosophical books and periodicals in the form of brief excerpts and synopses, will start publication sometime in October. The purpose of this journal "is not only to present English-speaking philosophy departments and libraries with a bibliography of essential philosophic literature, but also to give them an opportunity to keep abreast with the principal philosophic theories as presented by its respective authors." Communications concerning this new journal should be addressed to 884 Riverside Drive, New York City.

THE Symposium on Visual Fatigue, organized by the Committee on Visual Fatigue, under the chairmanship of Walter R. Miles, was held in the rooms of the National Research Council, 2101 Constitution Avenue, Washington, D. C., on May 20 and 21, 1939. The following program was presented:

WALTER R. MILES, Laboratory of Physiological Psychology, Yale University School of Medicine: Introductory—"The Visual Fatigue Problem."

GEORGE WALD, Biological Laboratories, Harvard University: "The Chemical Basis of Visual Adaptation."

CLARENCE H. GRAHAM, Psychology Laboratory, Brown University: "Frequency of Nerve Impulse Discharge as a Function of Time After Onset of Illumination."

SELIG HECHT, Laboratory of Biophysics, Columbia University: "Relation Between Visual Acuity and Illumination."

BRIAN O'BRIEN, Institute of Optics, University of Rochester: "Iris Measurements."

P. G. NUTTING, JR., Research Laboratories, Eastman Kodak Company: "The Influence of Flicker Fatigue on Flicker Frequency."

ALFRED BIELSCHOWSKY, The Dartmouth Eye Institute, Dartmouth Medical School: "Influence of Fatigue on the Mechanism Involved in Binocular Coöperation."

WALTER R. MILES, Laboratory of Physiological Psychology, Yale University School of Medicine: "Variations in the Polarity-Potential of the Human Eye."

FRANK K. MOSS, Lighting Research Laboratory, General Electric Company: "Visibility and Ease of Seeing."

ROSS A. MCFARLAND, Fatigue Laboratory, Harvard University: "The Effects of Anoxia on Certain Visual Functions."

MILES A. TINKER, Psychology Laboratory, University of Minnesota: "Visual Fatigue in the Reading of Print."

WALTER F. DEARBORN, Psycho-Educational Clinic, Harvard University: "On the Relations of Visual Fatigue to Reading Disability."

ROBERT K. LAMBERT, Eye Institute, Columbia University: "The Spasmodic Tendency and Its Effect on the Eyes."

HARRY M. JOHNSON, Department of Psychology, Tulane University: "Rival Notions of the Nature of Physiological Impairment."

At the Round Table on Visual Fatigue, held on May 21, the speakers of the previous day endeavored to formulate research plans and projects in the general field of visual fatigue studies.

This 2-day conference was held at the suggestion of the Committee on Scientific Aids to Learning of the National Research Council.

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